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DEPARTMENT OF THE INTERIOR

DRAFT ENVIRONMENTAL IMPACT STATEMENT

PROPOSED RANGE MANAGEMENT PROGRAM
FOR THE
BIG DESERT AREA

Prepared by

DEPARTMENT OF INTERIOR

BUREAU OF LAND MANAGEMENT

Robert Buffington, BLM State Director

81-16

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United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Idaho Falls District
940 Lincoln Road
Idaho Falls, Idaho 83401

We have forwarded for your review and comment the draft environmental impact statement (EIS) on proposed range management in the Big Desert area of eastern Idaho. This draft has been prepared by a team of resource specialists from the Bureau of Land Management.

The team has identified and analyzed in this draft statement those impacts associated with the implementation of the Bureau's proposed range management program for the area. Considered in the document are the impacts associated with implementing grazing systems in 30 allotments, including the necessary range improvements. The document also offers four alternatives with an analysis of the impacts associated with the implementation of each.

A public hearing is scheduled at 7:30 p.m., Tuesday, May 5, 1981, to receive oral and written testimony on the document. This hearing will be held in the former district courtroom, Bonneville County Courthouse, 605 N. Capital, Idaho Falls. We have attached further information on the public hearing including a registration card should you choose to testify. In order to have a list of participants available in the Idaho Falls District office one day before the hearing, we must have the registration card in this office at the close of business May 4, 1981. If you have any questions about the hearing, please call our team leader, Roger Wickstrom, at (208) 529-1020.

Further written comments are invited. To be considered in the preparation of the final EIS, they must be received on or before May 29, 1981. Oral and written comments will receive equal consideration in preparing the final statement. Written comments should be submitted to:

O'dell Frandsen
Bureau of Land Management
940 Lincoln Road
Idaho Falls, Idaho 83401

We look forward to your comments on this major effort. We thank you for your past and future help in our efforts to manage public lands in the best interests of all concerned.

Sincerely,

Odell A Frandsen

O'dell A. Frandsen
District Manager

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2-1 Land Status, Allotment Boundaries and Existing Projects (Map packet, back cover)
2-2 Proposed Projects and Treatments, Proposed Action and Alternative 3 (Map packet, back cover)
2-3 Proposed Projects and Treatments, Alternative 4 (Map packet, back cover)

Note: All Chapter 3 maps are located at the back of the document.

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HEARINGS HANDOUT

GENERAL INFORMATION REGARDING THE PUBLIC HEARINGS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT ON PROPOSED RANGE MANAGEMENT IN THE BIG DESERT AREA, IDAHO.

Public Hearing Schedule

7:30 p.m., Tuesday, May 5, 1981
Former District Courtroom, Bonneville County Courthouse
605 N. Capital, Idaho Falls, Idaho

Authority

The hearing is being held according to the objectives to the National Environmental Policy Act (PL 91-190; 83 Stat. 852, 853).

Purpose

The hearing is to receive comments (testimony) on the analysis of the proposed action and the four alternatives addressed in the draft environmental impact statement (EIS). Testimony presented at this hearing will be used in the preparation of the final EIS.

Composition of the Hearing Panel

The public hearing proceedings will be conducted by a hearing leader. The hearing leader will be accompanied by a technical panel composed of the Big Desert EIS team leader, technical coordinator, and representatives of the Bureau of Land Management staff involved in preparation of the draft EIS. The hearing leader or a technical panel member recognized by the hearing leader may ask questions of the participant to clarify points in the testimony.

Oral Statements

Persons wishing to give testimony will be limited to 10 minutes, with written submissions invited at the hearing.

Before giving testimony at the public hearing, participants are requested to complete the attached hearing registration form. Registration forms may also be obtained by contacting Roger Wickstrom, Bureau of Land Management, 940 Lincoln Road, Idaho Falls, Idaho, (208) 529-1020. Registration forms must be returned to this address by 4:30 p.m., May 4, 1981. Participants may register at the registration desk before the hearing. Time preferences for presentation of oral statements will be honored whenever possible. A tentative listing of speakers, in the order they will be called, will be available May 5, 1981 at the Bureau of Land Management's Idaho Falls District Office, 940 Lincoln Road or on May 5, 1981 at the registration desk.

After the last participant present has been heard, the hearing leader will consider the request of any other person present and wishing to testify. Only one participant will be allowed to represent the viewpoints of a single organization. However, any participant will be permitted to give germane testimony if it is offered as the views of opinion of private citizen.

General

Participants must direct their testimony to the contents of the document and to specific aspects of the proposed range management or alternatives.

Written Statements

Written statements from those unable to attend the hearing should be addressed to:

O'dell Frandsen
Bureau of Land Management
940 Lincoln Road
Idaho Falls, Idaho 83401

Written statements will be accepted on or before May 29, 1981.

PUBLIC HEARINGS REGISTRATION FORM

For public hearings on the draft environmental impact statement of proposed range management in the Big Desert area of eastern Idaho.

(Please Print)

To: O'dell Frandsen, Bureau of Land Management
940 Lincoln Rd., Idaho Falls, Idaho 83401

From: Name ______________________________

Street Address ______________________________

City, State ______________________ Zip Code ________

Representing ______________________________

I wish to express my view at the public hearing. Yes _____ No _____

I intend to submit written documentation. Yes _____ No _____

____
Signature

Verbal testimony will be limited to 10 minutes; written testimony will be accepted at the above address by 4:30 p.m., May 29, 1981.
Registration forms should be submitted to the Idaho Falls District office by 4:30 p.m., May 4, 1981.

cut here

Public Review of Statement

The following locations have copies of the draft statement available for public review.

Blaine County Courthouse
Hailey, ID 83333

Bingham County Courthouse
Blackfoot, ID 83221

Butte County Courthouse
Arco, ID 83213

Power County Courthouse
American Falls, ID 83211

Soil Conservation Service
Conservation Field Office
Aberdeen, ID 83210

Bureau of Land Management
State Office
550 W. Fort Street
Boise, ID 83724

Bureau of Land Management
P.O. Box 1889
Coeur d'Alene, ID 83814

Bureau of Land Management
Salmon District Office
P.O. Box 430
Salmon, ID 83467

Bureau of Land Management
Shoshone District Office
P.O. Box 2B
Shoshone, ID 83352

Bureau of Land Management
Boise District Office
230 Collins Road
Boise, ID 83702

Bureau of Land Management
Burley District Office
200 South Oakley Highway
Burley, ID 83318

Bureau of Land Management
Idaho Falls District Office
940 Lincoln Road
Idaho Falls, ID 83401

SUMMARY

(X) Draft ( ) Final Environmental Impact Statement

Department of Interior, Bureau of Land Management - lead agency

1. Type of Action

(X) Administrative ( ) Legislative

2. Brief Description of the Action

The Big Desert EIS covers an area west of Idaho Falls in southeastern Idaho and includes 1,162,463 acres of public land. The Bureau of Land Management proposes to implement a range management program on 596,972 of public land (34,411 acres of which lie within the Department of Energy withdrawal in the Idaho National Engineering Laboratory, or INEL). The remaining public lands are not grazed by livestock because of natural barriers, unsuitable topography, part of the INEL closed to livestock grazing, or are included in allotments that will not be analyzed at this time. Virtually all of the area, however, is used by wildlife.

Proposed use for the area is to allocate 60,640 AUMs for active grazing use by livestock and 932 AUMs for wildlife. After 20 years, it is estimated there would be an additional 31,766 AUMs which could be allocated to livestock and wildlife. Grazing management proposed for the 582,989 acres consists of rest rotation grazing on 70,032 acres, deferred rotation on 229,425 acres, seasonal grazing on 281,294 acres, and custodial management of 2,238 acres of public land along the Snake River.

3. Summary of Environmental Consequences

Vegetation would improve in quality and quantity, providing increased forage for both livestock and wildlife. It is estimated that ecological conditions in the EIS area would improve (See Table below).

Ecological Condition by Percent

	Present	Future
Poor	7	3
Fair	49	49
Good	18	36
Treated	8	10
Disturbed (by fire)	19	2

Wildlife habitat would remain stable or improve in condition. The availability of water is the limiting factor in the unit; the proposed range management program would improve wildlife habitat through increased water availability. Soil erosion would generally decrease and watershed conditions would improve slightly. There are no significant watershed problems under the present situation.

Adverse impacts would include a short-term loss of vegetation productivity on 80,500 acres proposed for vegetation manipulation. Land treatments could alter 21 sage grouse strutting grounds and degrade existing visual resources. Fences would increase the risk of antelope mortality. Increased level of grazing in some pastures could damage cultural sites.

4. Alternatives Considered

* No Action (continue present management).

* No Livestock Grazing.

* Increased Livestock Use. (The initial allocation for livestock grazing would be 65,930 AUMs. This alternative could increase available forage to an estimated 92,430 AUMs after 20 years through management and investments in range improvements and land treatments. See glossary for definition of AUM.)

* Minimal Range Improvements. (Allocation of forage to livestock would be 60,640 AUMs initially. Range improvements would be limited to only those absolutely required for basic management. After 20 years, it is estimated that 89,930 AUMs would be available for livestock and wildlife.)

5. Comments Requested

See Chapter 5

6. Draft Statement Made Available to the EPA and the Public

Draft: March 1981
Final:

Chapter 1

Purpose and Need

Indian ricegrass

This environmental impact statement (EIS) is being prepared to help decision makers and the public assess the social, economic and environmental impacts of implementing an intensive range management program. This range program involves 1,162,463 acres of public land administered by the Idaho Falls District of the Bureau of Land Management (BLM). The EIS area is located in eastern Idaho and covers parts of Bingham, Blaine, Bonneville, Butte and Power counties (Map 1-1).

This document analyzes forage allocation and range improvements that would be used to design an improved management program for the area.

During the inventory and planning process, resource problems were identified which require management action. These problems will be addressed in the selection of a management program for the area. Inventories identified poor condition in some allotments caused by either poor distribution or early spring grazing. Forage production was determined not to be a limiting habitat factor in deer and antelope production on the Big Desert; water availability is the limiting factor of range and numbers. Additional water would aid sage grouse production.

The District prepared this draft EIS as part of the Bureau planning process. The process up to this point has involved pre-planning efforts, resource inventories, resource development potentials, and potential conflicts arising out of development. The District formulated multiple use resource recommendations which have played an important role in the development of the proposed action and alternatives. A scoping process involving the public, federal and State agencies and special interest groups has been used to incorporate outside viewpoints in issue identification and the development of the proposal and alternatives. The District held open houses in 1980 on June 16 at Arco, June 18 at Aberdeen and June 19 at Idaho Falls, giving the public a chance to comment on the proposed action. Input from the scoping process helped refine the proposed action and identify significant issues to be addressed in the EIS.

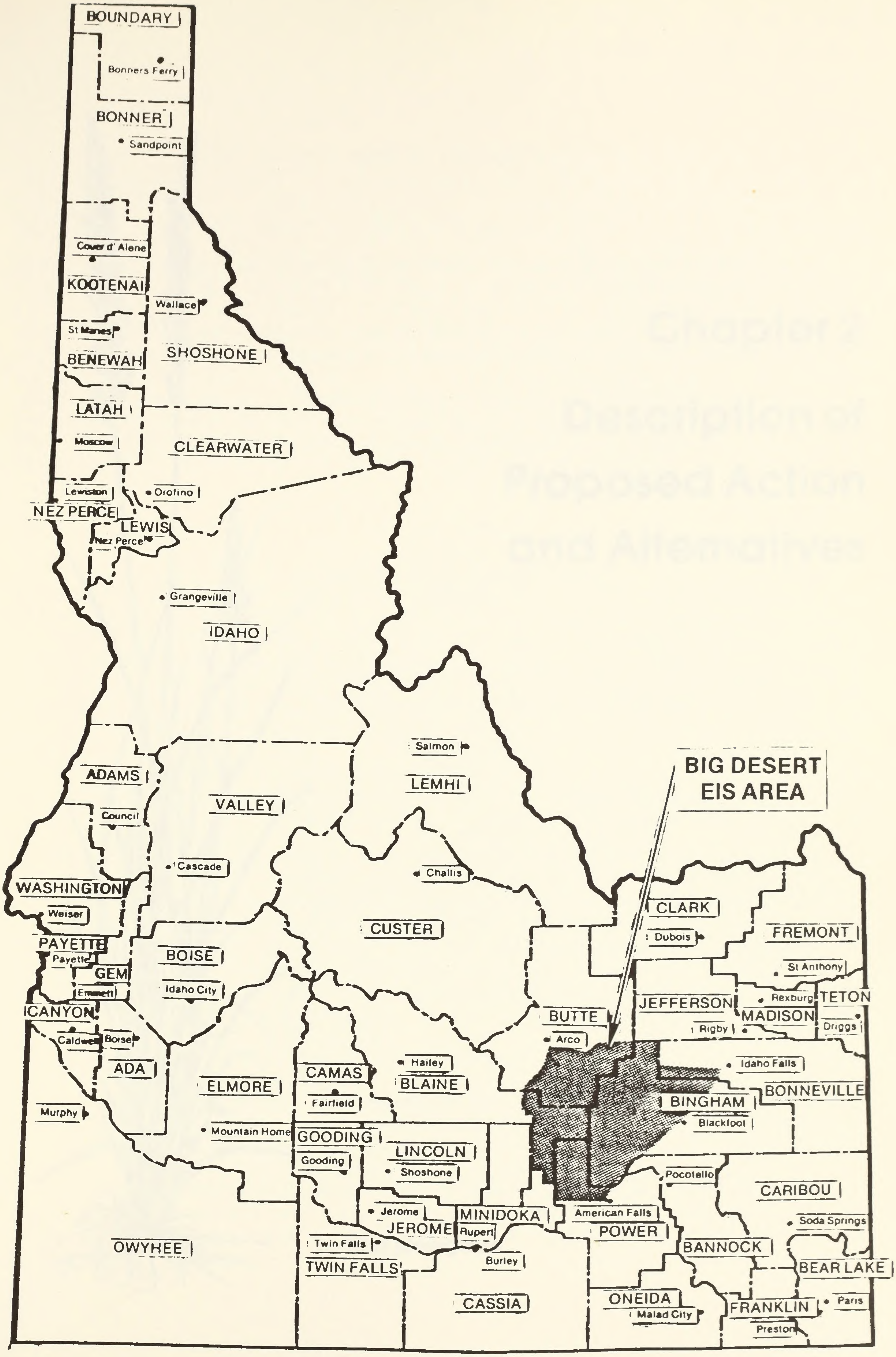
Issues identified as being significant include the following:

*Allocating forage.
*Implementing range improvements.
*Implementing grazing systems.

The purpose of the proposed action is to provide adequate forage in the long term to stabilize the local livestock industry and to meet wildlife needs. The proposed action would improve resource conditions through improved livestock management. The proposal would provide optimum protection, maintenance and improvement of the basic resources (soil, vegetation and water) as required by the Taylor Grazing Act and the Federal Land Policy and Management Act.

A notice of intent to prepare an EIS on the Big Desert planning unit was published in the Federal Register on September 18, 1980. This notice listed the proposed action and alternatives that the District developed through the planning process. It invited additional public involvement in the EIS process.

The EIS is being prepared in compliance with the National Environmental Policy Act.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Chapter 2

Description of Proposed Action and Alternatives

prairie junegrass

PROPOSED ACTION

Introduction

The Bureau of Land Management (BLM) is proposing to implement an intensive range management program on 1,162,463 acres of public land which includes withdrawn lands in the Idaho National Engineering Laboratory (INEL) in the Big Desert. This range program is designed to meet the multiple use objectives developed through the Bureau's planning process.

The jurisdiction of lands within the Big Desert area is summarized in Table 2-1. See Appendix A for a breakdown of acreage and status by allotment. See Map 2-1 in map packet on back cover for land status boundaries.

TABLE 2-1

Planning Unit Acreage Summary
EIS Area

Public Lands [1]	State	Private	NPS	Total
1,162,463	84,800	521,318	45,316	1,813,897

Public Land [1]

Sec. 15	2,238
Sec. 3	580,769[2]
Management to Idaho Department of Lands	13,863
Grazing Eliminated	120
Lava	270,000
Unsuitable	3,000
Public Land Not Grazed	214,790[2]
Grazed but not analyzed	77,683[2]
	1,162,463

[2] Parts of these totals include the Department of Energy withdrawal at the INEL.

A total of 562,561 acres of public land and 34,411 acres of Idaho National Engineering Laboratory (INEL) withdrawal land are included in grazing allotments. All acres in the planning unit are used by wildlife.

In the remainder of this chapter, the proposed action and the alternatives will be addressed separately. Section 15 grazing lands along the Snake River will be presented separately from Section 3 grazing lands because the proposed management is significantly different. The proposed action describes the allocation of vegetation between consumptive and nonconsumptive uses and the management of livestock grazing on public lands.

The District developed multiple use objectives and the proposal from individual resource objectives and recommendations considered during the BLM planning process. Objectives and recommendations were often conflicting and had to be modified to develop the most workable multiple use plan. Conflicting resource recommendations, proposed resolutions and resulting resource trade-offs are shown in Appendix B. Selected objectives follow which the proposal is designed to achieve.

Objectives

1. Improve ecological condition throughout the EIS area from present condition classes of 7% poor, 49% fair, 18% good, 8% treated and 19% disturbed to 3% poor, 49% fair, 36% good, 10% treated and 2% disturbed within 20 years.
2. Increase the usable livestock forage from the present production of 60,640 AUMs to 91,685 AUMs within 20 years. (AUM stands for animal unit month, or the amount of forage needed to feed one cow or five sheep for 1 month.)
3. Increase acreage in upward range trend.
4. Provide adequate habitat on 597,000 acres of antelope summer range to support 1,080 antelope by 1995. (Present estimated summer population is 540.)
5. Provide adequate habitat on 107,000 acres of deer range to support 650 deer by 1995. (Present estimated winter population is 325.)
6. Maintain and enhance sage grouse habitat to support an increase of 28 percent in the sage grouse population by 1990.
7. Improve watershed conditions and water quality by upgrading vegetation conditions and increasing vegetation cover.
8. Provide for the protection and conservation of threatened and endangered plants and animals.

Major parts of the proposed action include the following:

- Vegetation Allocation
- Livestock Grazing Management
- Range Improvement and Land Treatments
- Monitoring Programs
- Administrative Procedures
- Implementation Schedule

Vegetation Allocation

The EIS area includes grazing allotments located along the Snake River (Section 15) and on the Arco desert (Section 3)(see Glossary).

Section 15 Allotments

The allotments located along the Snake River contain 2,238 acres of public land. In the past, river allotments were used under custodial management (see Glossary). A wide degree of latitude was allowed, in that the long grazing period written on the lease resulted in many more AUMs being used than were authorized. For example, a lease might have read:

10 cattle	4/1 - 8/1	10 AUMs

This was intended to mean that each cow could feed on the allotment for 1 month out of the 4 months, not that each cow could feed for all 4 months. Ten cattle feeding for this entire season of use would exceed the carrying capacity by a factor of four. Because many leases were misinterpreted, it is difficult to estimate the actual AUMs used on each lease.

The proposed action is to continue custodial management of these allotments. Accurate numbers of livestock and periods of use have already been established and will be specified in leases. Table 2-2 shows periods of use and licensed AUMs in the proposed action. The adjusted stocking rates are based on allotment evaluation and consultation with permittees during 1979 and 1980. In many cases, the leases still have expanded seasons of use, but specify the number of days stock may be on allotments. Adjusted levels of grazing would be monitored closely in the future to determine whether or not other adjustments are needed. Monitoring would include utilization by paired plot method, actual use data at the end of each grazing season, and fields checks of use during the grazing season. Condition and trend data would be collected in representative areas.

Allotment evaluations have concluded that past grazing practices have not created any significant conflicts with other resource uses and values. Proposed management would maintain or improve existing conditions.

Section 3 Allotments

Vegetation for consumptive use on Section 3 allotments would be allocated to livestock, deer and antelope. Unallocated vegetation is

TABLE 2-2

Snake River (Section 15) Allotment Summary
Proposed Action

Allotments	Livestock #	Use Period	% FR*	AUMs Licensed
Robinson	75 C	05/10-12/01	100	75
Maximillion Farms	25 C	08/01-11/30	35	35
Goodwin	50 C	06/01-06/15	60	15
Hill	80 C	05/15-05/31	66	26
	10 C	06/01-07/01	66	7
Nelson	49 C	05/15-07/15	73	72
Caldwell	27 C	06/01-09/10	65	58
Hoskins	25 C	05/01-06/30	100	50
	3 H	05/01-06/30	100	6
Mickelson	45 C	05/01-09/30	96	108
Clough	8 C	06/01-02/28	100	8
Stecklein	50 C	05/15-10/01	85	99
H. Hamilton	50 C	05/01-10/31	100	6
Horrocks	20 C	06/01-07/06	100	14
Polatis	16 C	06/01-06/30	100	32
	16 C	08/01-08/31		
	10 C	07/01-08/31	100	20
McGovern	5 C	06/01-09/31	97	20
Johnson	466 C	06/15-10/31	2	42
Fullmer	10 C	06/01-08/31	100	30
			TOTAL	723

*Percent federal range

available for watershed protection, aesthetics, small birds and animals, and other nonconsumptive uses. The forage allocation is based on animal numbers (determined through the Bureau's planning process), animal forage requirements, dietary preference and plant maintenance requirements. Procedures are explained in Appendixes C and D. Table 2-3 summarizes the vegetation allocation, management and projects for the proposed action and alternatives. Vegetation allocation by allotment is shown in Table 2-4 and summarized in Table 2-5. Pounds of forage can be calculated by multiplying AUMs times 800.

Forage will not be allocated by the BLM on the Carter, Nipples, State Twin Buttes, Katseanes and Whitehead allotments. The lead for forage allocation and management would be transferred to the Idaho Department of Lands (IDL).

Public land acreage in these allotments is relatively small compared to the total area grazed: Carter 16%, Nipples 14%, State Twin Buttes 10%, and Katseanes 33%. Whitehead, which contains a majority of public land (78%), would also be included in the transfer of management. This allotment is not fenced separately from Nipples, and both allotments are leased by the same person. The IDL is interested in more intensive management on the above allotments as shown in the allotment management plan (AMP) implemented on the Twin Buttes allotment. It would be in the best interest of both agencies for the IDL to assume the dominant range management role. There will be no further discussion of these allotments in the EIS.

Sufficient vegetation (932 AUMs) would be allocated by allotment to provide the forage needs of antelope and deer populations present or expected within 3 to 5 years after the proposed action is fully implemented. Population management levels were determined with information from public input, including the Idaho Fish and Game Department, during the land use planning process.

The active grazing preference would be reduced an average of 8 percent from 65,217 AUMs to 59,917 AUMs. The past 5-year average licensed active use was 43,641 AUMs. A summary outlining the results of the forage allocation process is listed in Table 2-5.

TABLE 2-3

Summary of Proposed Action and Alternatives, Section 3

	Proposed Action	Alternative 1 No Action	Alternative 2 No Livestock Grazing	Alternative 3* Increased Livestock Use	Alternative 4 Grazing Reductions with Minimal Improvement
5-yr. Ave. Actual Use	43,641	43,641	43,641	43,641	43,641
Vegetation Allocation					
AUMs to Livestock Initially	59,917	65,217	0	65,217	59,917
AUMs to Wildlife Initially	932	932	932	932	932
20-year projection**	91,683	71,159	78,327	91,363	88,862
Grazing Management					
Number of Allotments	24	25	0	25	24
Grazing Systems					
Rest Rotation	70,032	-	-	70,032	70,032
Deferred Use	229,425	-	-	229,425	229,425
Seasonal Use	281,294	580,871	-	281,414	281,294
State Of Idaho***	13,863	13,863	13,863	13,863	13,863
Eliminate Grazing	120	-	580,871	-	120
Range Developments					
New Projects					
Wells (No.)	9	0	0	9	3
Pipelines (Mi.)	37	0	0	37	24
Troughs (No.)	36	0	0	36	15
Reservoirs (No.)	3	0	0	3	3
Storage Tanks (No.)	25	0	0	25	4
Fences (Mi.)	82.5	0	2.5	82.5	32
Cattleguards (No.)	12	0	0	12	7
Roads (Mi.)	8	0	0	8	5
Land Treatments (acres)					
Plow and Seed	10,200	0	0	11,400	4,800
Burn	63,000	0	0	101,350	58,200
Spray	7,500	0	0	14,736	
Seed	7,800	0	0	16,830	
Spray and Seed	-	0	0	8,577	
Improvement Costs	$1,758,200		$166,500	$2,338,900	$654,600

*URA Step IV - Natural potential and land treatment potential.
**Total AUMs available for allocation to livestock and wildlife.
***Public lands to be managed by the State of Idaho.

TABLE 2-4

Initial Vegetation Allocation
Proposed Action

Allotment	Antelope AUMs	Deer AUMs	Livestock AUMs	Non-Consumptive AUMs	Total AUMs
AEC Riverfield	4	9	607	8,220	8,840
Big Butte	60	57	3,414	29,061	32,592
Big Desert	192	78	33,222	104,350	137,842
Bowers			20	184	204
Cedar Butte	20	20	901	7,495	8,436
Cinder Cone	3	19	1,020	8,726	9,768
Cox's Well	6	22	1,588	15,679	17,295
East Butte	1	2	123	896	1,022
Hells Half-Acre			4	155	159
Houghland	25	26	2,499	18,081	20,631
Huddles Hole			45	891	936
Judge			8	48	56
Klempel			13	236	249
Moonshine	4	21	573	6,649	7,247
Mooreland			262	5,005	5,267
Muirbrook				36	36
No. 2 Well	24	9	1,301	12,833	14,167
Quaking Aspen	71	46	5,637	56,059	61,813
Riverfield	3	6	203	3,860	4,072
Rock Corral	3	19	1,200	6,630	7,852
Rudeen	31	25	826	4,351	5,233
Smith	5	20	2,386	15,847	18,258
Springfield	56	22	2,729	24,238	27,045
Sunset	9	14	1,322	14,846	16,191
Webb			14	279	293
TOTALS	517	415	59,917	344,655	405,504

TABLE 2-5
Forage Allocation Summary

Change from Grazing Preference

	Number of Allotments	Change in AUMs	Range of Adjustment(%)
Proposed decreases	14	-5,300	- 6% to 90%
Unchanged	10	0	0
Eliminate grazing	1	-10	-100%

Change from Actual Use

	Number of Allotments	Change In AUMs	Range of Adjustments(%)
Proposed decreases	10	-1,976	- 6% to 91%
Unchanged	2	0	0
Proposed increased	12	+18,258	+2 to 200
Eliminate grazing	1	-6	-100

On allotments scheduled for more intensive grazing systems, vegetation allocation is based on 50 percent utilization levels of palatable plants. On allotments scheduled for less intensive grazing systems, vegetation allocation is based on the biological limits of forage species. (The biological limit is the level or degree of grazing that can be allowed without periodic rest treatments and still provide plant growth requirements.) Utilization levels of current years' production varies by vegetation type and season of use, but normally falls between 30 and 50 percent. Specific utilization levels are described in Appendix D.

If grazing systems are implemented on less intensive management areas in the future, allowable utilization levels would increase to 50 percent.

Additional forage which becomes available in the future would be allocated according to the following criteria.

1. Additional forage would be allocated to livestock until the livestock operator's total grazing preference has been satisfied. This considers the fact that only wildlife use the lava areas that are not allocated for livestock grazing.

2. After the preference has been satisfied, forage increases would be allocated on an equitable basis to all consumptive uses. Proportionate increases would be based upon actual use and utilization studies.

Livestock Grazing Management

The lack of late season water has limited the types of grazing systems that can be used in the EIS area. Ranch operators find it economically impractical to haul water on 14 allotments, so livestock are removed before seed-ripe. This eliminates the potential for seed trampling which is important in getting seedlings established.

Grazing systems were selected to satisfy vegetation requirements for improvement and to consider factors such as project development and the needs of each ranch operator. Grazing systems would consist of rest rotation, deferred grazing and seasonal grazing. Table 2-6 summarizes acres and allotments in each grazing system. The existing and proposed stocking rates, season of use, kind of livestock and grazing systems by allotment are shown in Table 2-7.

Rest rotation, deferred or seasonal grazing systems are proposed to achieve management objectives. Rest rotation grazing would be applied to one allotment. This grazing system rests the range from grazing at suitable intervals dictated by the growth requirements of key forage plants. It is designed to counteract the effects of the selective grazing habits of livestock. The system allows desirable forage species to recover vigor, produce seed and establish new seedlings.

Deferred grazing is proposed on 15 allotments. This system delays grazing in succeeding years on a portion of range until a specific plant growth stage is reached. The entire range unit is used at some time during the grazing system, and two or more pastures are necessary. Grazing is rotated among all pastures during the grazing season. One pasture is normally deferred each year until after seed of the key forage plants is mature. Deferred grazing systems that do not allow a pasture to be rested until seed-ripe are proposed on 9 of the 15 allotments. These systems are designed to allow sufficient plant regrowth following early spring grazing to maintain plant vigor and establish seedlings.

Seasonal grazing is proposed on eight allotments. Under this system, grazing occurs on the same area and during the same period each year. Normally, use is made during early spring or after seed maturity of key species during the fall. There is some winter use.

TABLE 2-6

Big Desert Grazing Systems

Rest Rotation	1 allotment	70,032 acres
Deferred	15 allotments	229,425 acres
Seasonal	8 allotments	281,294 acres

One allotment contains a large percentage of private land with small acreages of unfenced public land. Grazing will be eliminated on this allotment because of the poor condition of the range, and the minor role the allotment plays in the permittee's operation.

Proposed livestock turn-out dates would be 2 to 3 weeks later than present ones (see Table 2-7). Turn-out dates would correspond with plant growth stages (that is, 4- to 6-inch leaf height of bluebunch wheatgrass, 3- to 4-inch leaf height of squirreltail, and 1-inch leaf height of sandberg bluegrass on sheep ranges). Grazing use could begin as much as 2 weeks earlier than these growth stages where old forage is present from the previous year's rested or regrowth pastures.

Range Improvements and Land Treatments

The proposed range improvements include 9 wells, 38 miles of pipeline, 36 water troughs, 3 reservoirs, 25 water storage tanks, 82.5 miles of fence, 12 cattleguards and 8 miles of road. The potential exists to control sagebrush on roughly 80,500 acres, of which 10,200 acres could be revegetated with desirable plants. An additional 7,800 acres could be seeded without brush control (see Map 2-2 inside back cover). On the remaining 62,500 acres, native vegetation would increase once brush is controlled. Natural barriers or other land features could somewhat limit the total acres treated. Proposed development by allotment is shown in Table 2-8. Project development would cost about $1,758,200 (Table 2-9). Proposed and existing developments would be periodically maintained (Table 2-9).

Environmental analyses (EAs) will be prepared for individual projects when more details are known.

TABLE 2-7

Section 3 Allotment Summary

Allotment	Federal Acres	Season of Use		Grazing System		Livestock Class	Livestock Use AUMs		
		Existing	Proposed	Existing	Proposed		Active Preference	5-year Licensed AUMs	Proposed*
AEC Riverfield	16,054	04/16-12/31	04/16-12/31	S	D	C	873	745	607
Big Desert	248,783	04/01-06/30 10/16-02/21	04/15-06/30 10/16-02/21	S	S	Sh	33,222	17,454	33,222
Big Butte	44,642	04/16-06/30	05/01-07/14	S	D	C	3,889	3,188	3,414
Bowers	320	04/20-05/19	04/20-05/19	S	D	C	40	32	20
Cedar Butte	12,622	04/22-06/15 11/16-01/07	04/22-06/15 11/16-01/07	S	S	C	901	720	901
Cinder Cone	12,052	04/01-05/31	04/16-05/31	S	D	C	1,020	1,008	1,020
Cox's Well	17,344	04/01-11/13	04/15-11/27	S	D	C	1,941	1,043	1,588
East Butte	1,183	05/01-10/18	05/01-10/18	S	D	C	123	123	123
Hells Half Acre	176	05/01-05/31	05/01-05/31	S	S	C	30	30	4
Houghland	23,163	04/01-09/05	04/15-09/05	S	D	C	2,499	2,312	2,499
Huddles Hole	652	07/01-08/15	07/01-08/15	S	S	Sh	45	15	45
Judge	80	04/01-10/01	04/15-10/01	S	S	C	18	18	8
Klempel	320	04/16-07/16	04/16-07/16	S	D	C	57	57	13
Moonshine	6,384	06/21-08/09	06/21-08/09	S	D	C	573	400	573
Moreland	7,469	04/23-05/14	04/23-05/14	S	S	S	262	179	262
Muirbrook	Eliminate Grazing					C	10	6	
No. 2 Well	23,896	04/01-06/15	04/15-06/29	S	D	C	1,464	1,279	1,301
Quaking Aspen	70,032	04/16-01/31	05/01-01/31	S	RR	C	6,721	5,975	5,637
Riverfield	8,114	05/01-09/20	05/01-09/20	S	D	C	203	203	203
Rock Corral	10,752	04/01-05/30	04/16-05/30	S	S	Sh	1,200	440	1,200
Rudeen	10,153	04/01-05/15	04/15-05/29	S	D	C	1,800	555	826
Smith	20,233	04/14-06/22	05/01-07/16	S	D	C	2,771	2,760	2,386
Springfield	34,546	04/01-05/31	04/15-06/15	S	D	C	3,840	3,384	2,729
Sunset	11,021	04/16-10/23	05/01-11/07	S	D	C	1,572	1,572	1,322
Webb	760	04/01-05/31	04/15-05/31	S	S	C	143	143	14
TOTALS	580,871						65,217	43,641	59,917

S= seasonal
D= deferred
RR= rest rotation

C= cattle
Sh= sheep

*This column also represents inventoried carrying capacity.

TABLE 2-8

Proposed Range Improvements
Proposed Action

Allotment	Wells No.	Pipelines Miles	Troughs No.	Reservoirs No.		Storage Tank No.	Fences Miles	Cattleguards No.	Roads Miles	Vegetation Manipulation Acres	
AEC Riverfield	1	-	4	-		1	26	2	-	-	-
Big Butte	1	9	5	-		1	10.5	-	-	Plow & Seed	2,100
Big Desert	3	-	-	-		3	-	-	5	Seed	4,800
	-	-	-	-		-	-	-	-	Burn	22,000
Bowers	-	-	-	-		-	.5	-	-	-	-
Cedar Butte	-	-	-	-		-	-	-	-	-	-
Cinder Cone	-	.5	5	-		-	-	-	-	-	-
Cox's Well	-	2.0	-	3	-	1	3.5	-	-	-	-
East Butte	-	1.5	2	-	-	-	-	-	-	-	-
Hells Half Acre	-	-	-	-	-	-	.75	-	-	Plow & Seed	100
Houghland	-	4	4	-	-	1	2	-	-	-	-
Huddles Hole	-	-	-	-		-	-	-	-	-	-
Judge	-	-	-	-	-	-	.75	-	-	Plow & Seed	- 30
Klempel	-	-	-		-	-	1.5	-	-	-	-
Moonshine	1	5	4	-	-	1	2	1	-	-	-
Mooreland	-	-	-	-	-	-	-	-	-	-	-
Muirbrook	-	Eliminate	Grazing	Use	-	-	2.5	-	-	-	-
No. 2 Well	-	6	4	-	-	-	-	-	-	Burn	16,000
	-	-	-	-	-	-	-	-	-	Plow & Seed	4,000
Quaking Aspen	1	-	-	-	-	12	20.5	3	-	Plow & Seed	2,500
Riverfield	-	-	4	-		-	2	2	-	Plow & Seed	600
Rock Corral	1	9	4	-		1	-	-	-	-	-
Rudeen	1	-	-	-		2	3	1	-	Burn	2,000
	-	-	-	-		-	-	-	-	Plow & Seed	520
Smith	-	-	-	-		2	-	-	-	Spray	5,000
Springfield	-	1	-	-		-	3	-	3	Burn	15,000
	-	-	-	-		-	-	-	-	Seed	3,000
Sunset	-	-	-	-	-	-	4	3	-	Spray	2,500
Webb							-	-	-	Plow & Seed	350
TOTALS	9	38	36	3		25	82.5	12	8		80,500

TABLE 2-9

Project Development and Maintenance Cost
Proposed Action

Project	Proposed Units	Unit Cost	Total Cost	Existing Project	Existing Maintenance Responsibility*	Annual Maint. Cost/Unit	Annual Maint. Cost Existing and Proposed
Wells**	9	$35,000 each	$315,000	3	BLM		
Pipelines	38	$5,000/mi	190,000	.25	Permittee	$200	7,450
Troughs	36	$1,000/ea	36,000	unknown	Permittee	unknown	unknown
Reservoirs	3	$8,000/ea	24,000	34	BLM	unknown	unknown
Storage Tanks	25	$6,000/ea	150,000				
Fences	82.5	$2,600/mi	214,500	111 mi.	Permittee	$80	15,280
Cattleguards	12	$3,500	42,000	20	BLM	unknown	unknown
Roads	8	$4,500/mi	36,000	unknown	BLM	unknown	unknown
Sagebrush control	62,500	$7/acre	437,500	3,240 acre	BLM	unknown	unknown
Sagebrush control and seed	10,200	$20/acre	204,000	-	BLM	unknown	unknown
Seeding	7,800	$14/acre	109,200	39,264 acre	BLM	unknown	unknown
Springs	-	-	-	1	BLM	$50	$50.00
TOTAL			$1,758,200				

* Future maintenance responsibility will be negotiated with permittee.
** Ave. 800 ft. deep at $25/ft drilling and $15,000 to equip.

Project Development and Design Criteria

Reservoir Development (Map 2-2 inside back cover)

Dams would be constructed to impound spring runoff water for livestock and wildlife. Water storage capacity would range from one-half to one acre-foot. Fill material would come from the impoundment area, or if needed, from nearby sites. Borrow areas would be rehabilitated as needed. If necessary, the reservoir storage area would be sealed to prevent seepage. Specific reservoir sites would be analyzed before selection.

Pipeline Development (Map 2-2)

Pipelines would be installed to carry water from existing and new wells and springs to areas short on water.

Construction would consist of burying a 1.25- to 2-inch plastic pipe about 20 inches below the surface. Pipelines are installed in two ways. On deep soils, a trenching machine is used to dig the trench, lay the pipe, and cover it with soil in one pass. The trench opening would average 2 feet. The soil is mounded on top of the trench to minimize the depression after settling. The second method is to lay pipe on the surface of the ground when soil depth is limiting. Water would be provided about every mile along the pipeline for livestock and wildlife. During design and construction, the method used would minimize environmental impacts.

To provide water for wildlife that become dependent upon the new sources, pipelines would remain charged with water during the dry season. Pipelines would be drained by September 15 to prevent freezing. The BLM would coordinate with ranchers and the Idaho Department of Fish and Game to provide this water.

Fence Construction (Map 2-2)

Fences would be constructed to divide allotments into pastures. Fences would be constructed to control livestock without restricting the movement of deer and antelope. Existing management fences that create wildlife movement problems would be modified. Proposed fence lines would not be bladed or scraped. Gates or cattleguards would be installed where fences cross existing roads.

East-west fences in antelope migration areas would be clip or let-down fences to allow passage of antelope during the winter season or when livestock are not present. The BLM would be responsible for management of these special purpose fences.

Land Treatments

Vegetation manipulation projects would be done in irregular patterns creating more edge effect, and islands of vegetation would be left for cover. Sagebrush cover would be reduced on 62,500 acres by chaining, burning or chemical treatment. An additional 10,200 acres would be plowed and seeded, and 7,800 acres would just be seeded. About 4,800 acres of the area to be plowed and seeded is on a stock driveway infested with halogeton. Plowing followed by seeding with a very competitive grass is the best method of controlling this poisonous plant. Roughly 7,500 acres in the Smith and Sunset allotments would be sprayed. These sites are dominated by threetip sagebrush which is a sprouter (see Glossary). Spraying is the only effective method available to reduce threetip sagebrush density and allow release of forage species on the site. See Table 2-8 for a breakdown by allotment.

The specific acreage by treatment method (chaining, burning or chemical treatment) is not identified. An area suited to chaining or chemical treatment now may be better treated by burning later. Types of chemicals used could also change as new ones are approved or present ones restricted. Only areas in poor and fair ecological condition were identified for potential land treatment.

The following restrictions would apply to potential sites which could further limit proposed treatment acreage.

1. All vegetation manipulation projects would be done in irregular patterns creating more edge, and islands of vegetation would be left for cover.
2. Consultation with Idaho Fish and Game is necessary in job layout and design.
3. Plow and seed only on loamy, stable soils.
4. Burning sagebrush areas would normally occur during September or October after sufficient rainfall has been received to limit damage to desirable vegetation. Sagebrush could also be reduced by dragging a large chain along the ground between two caterpiller tractors.
5. Chemical treatment would consist of applying 2,4-D during the spring to control sagebrush. Before chemicals were applied, the BLM would comply with the Federal Working Group on Pesticide Management regulations. They must approve any application over 600 acres in size or any size application of chemicals on the restricted list (2,4-D is not on the restricted list). By cooperative agreement, approval or concurrence would be obtained from the Idaho Department of Fish and Game before any chemicals were applied.
6. All land treatment projects would be limited in size, where necessary, by the cover requirement of wildlife on specific wildlife ranges.
   --On sage grouse brood rearing areas, the sagebrush canopy cover would not be reduced below 10 percent.
   --On sage grouse nesting and wintering areas, the

sagebrush canopy cover would not be reduced below 20 percent.
--On general antelope ranges, the sagebrush would not be reduced below 5 percent canopy cover. Winter ranges and spring fawning areas would not be treated unless overall benefits to antelope would result.
-- Leave at least 20 percent native vegetation in land treatment projects for cover.

Standard Operating Procedures

The following procedures would be followed in the construction of all management facilities and vegetation treatments.

1. Roads or trails to new construction or project sites would not be constructed. Off-road vehicles or existing roads and trails would be used.
2. Cultural and endangered species clearances would be conducted on all project sites. If values may be damaged, the project would be abandoned, modified, relocated or the cultural site salvaged.
3. Project clearances for threatened and endangered species would cover areas adjacent to project sites to make sure any increase in livestock use would not significantly affect any threatened and endangered species population.
4. In areas of high cultural resource site density, any increases above present forage utilization levels would be preceeded by a cultural resource inventory. Actions which would significantly impact cultural resource values would not be allowed.
5. All wilderness values would be protected on lands under wilderness review. Guidelines in the Interim Management Policy would be followed. Specific projects would be judged individually through environmental assessments to determine whether they would be impairing.
6. All actions would address BLM Visual Resource Management criteria. Projects would be designed to minimize adverse visual impacts.
7. Wildlife escape devices would be installed wherever water troughs and tanks create a hazard to wildlife.
8. In critical wildlife habitats (winter ranges, raptor nest sites, strutting grounds, etc.), construction work on range improvements would be scheduled to avoid or minimize disturbance to wildlife.
9. Areas disturbed during project construction would be reseeded with a mixture of grasses, forbs and shrubs.
10. Analysis of cost effectiveness would be done on an allotment management plan (AMP) basis prior to the installation of any management facility or land treatment.

Monitoring Programs

Studies and evaluation procedures would be according to the BLM Manual, Section 4412, to determine if the Management Framework Plan and specific allotment objectives are being met. These studies would include compiling information on actual use, range trend, range/watershed condition, watershed quality, utilization, weather data, carrying capacity, and wildlife habitat conditions. A study site would be selected and read cooperatively with livestock operators and other interested agencies when possible. Where specific objectives are not met, adjustments would be made in season-of-use, in livestock numbers (including removal), or in the grazing system.

Utilization studies would be conducted during or at the end of the grazing season on use pastures. When utilization reaches desired levels, livestock would be moved to the next pasture scheduled for grazing. If utilization limits are reached in all pastures before the end of the scheduled grazing season, livestock would be removed from the allotment.

Utilization studies would be conducted using the key forage plant method (BLM Manual 4410). This method establishes key plant species and areas that would be monitored for utilization. Monitored areas would represent most of the grazing area within an allotment or pasture. Key species to be monitored include bitterbrush and bluebunch wheatgrass. All studies will be documented in the AMP (allotment management plan) files.

Administrative Procedures

The BLM would issue permits according to regulations (43 CFR 4100) for grazing livestock on each allotment within the framework of the grazing system. The grazing permit would specify the grazing area, livestock numbers and kind, season-of-use and total AUMs the permittee may use.

BLM employees would make routine allotment inspections to ensure that livestock numbers and time of grazing for each pasture comply with that authorized by the permit. Trailing permits would be required for livestock, if needed. BLM would control livestock trespass according to grazing regulations. Livestock would be ear-tagged if necessary to aid in management and trespass control. Land exchanges would be encouraged on intermingled lands where grazing administration would be improved.

Implementation Schedule

Adjustments in livestock use would be implemented within a year after the EIS has been completed. Where adjustments are protested or appealed, adjustments in use may be made over a 5-year period. Based on funding, water development, road construction and fencing would be completed within 5 years, allowing all grazing systems to be functional by the 1987 grazing season.

Land treatments (brush control and seeding) would be completed and available for use within 15 years. About one-third of the treatment acreage would be completed during each of the three 5-year periods (see Table 2-10).

Monitoring programs for vegetation and wildlife would be established as grazing management is implemented. Archaeological clearances would be completed before any range improvements are started.

TABLE 2-10

Project Implementation*
Proposed Action

	1982-1987	1988-1992	1993-1997
Livestock Adjustments	X		
Initiation of Management	X		
Range Improvements			
Fences, water developments and roads	$893,000		
Vegetation Manipulation	$269,000	$269,000	$269,000

* Project implementation would depend on the availability of funds.

ALTERNATIVES

The only alternative to the proposed action that deals with Section 15 Snake River lands is the no livestock grazing alternative. This alternative would require that all livestock be removed from public lands along the Snake River.

The no action alternative is not selected because licensing procedures would be completed anyway. The other two alternatives--increased livestock forage, and grazing adjustments with minimal range improvements--are based on project development. Because no project development is proposed or needed on Section 15 lands, there is no need for these alternatives.

ALTERNATIVE 1
NO ACTION

The current livestock grazing program would continue. The active grazing preference would remain at 65,217 AUMs. This alternative assumes that the average, annual licensed use for the last 5 years (43,641 AUMs) would continue at this level (Table 2-11).

TABLE 2-11

Proposed and Existing Use
Alternative 1 No Action

	Proposed Use	Existing Use
Livestock	43,641 AUMs*	43,641 AUMs*
Wildlife	932	932
TOTALS	44,573 AUMs	44,573 AUMs

*Five-year average licensed active use

Existing seasons-of-use, grazing systems, and level of livestock use are shown by allotment in Table 2-7. No specific forage allocation is made for wildlife in the present forage allocations.

No additional project development or land treatment projects for livestock grazing would occur. Project development for other resource activities would continue under present programs.

ALTERNATIVE 2
NO LIVESTOCK GRAZING

All livestock grazing on public lands would be eliminated. All existing grazing privileges and cooperative agreements for range improvements would be cancelled. Salvage rights would be granted to range users who had contributed to range management facilities. Use on intermingled State and private lands would be possible if the landowner or lease holder of the State tract were able to fence lands away from public lands. Forage on public lands would be reserved for wildlife and other resource values (Table 2-12).

TABLE 2-12

Proposed and Existing Use
Alternative 2 No Livestock Grazing

	Proposed Use	Existing Use
Livestock	0 AUMs	43,641 AUMs *
Wildlife	1,864 AUMs	932 AUMs
TOTALS	1,864 AUMs	44,573 AUMs

* Five-year average licensed use.

No range improvements would be constructed. Facilities for wildlife and watershed management would continue under existing programs. About 111 miles of existing pasture fence would be removed. Boundary fences around the EIS area would be maintained. The cost of fence removal would be about $166,500.

ALTERNATIVE 3
INCREASED LIVESTOCK USE

This alternative would implement livestock grazing management without changing existing AUM levels or season-of-use. Livestock would not be limited to any specific utilization levels. Use up to the present active grazing preference of 65,217 AUMs would be allowed (Table 2-13). No grazing above this total grazing preference would be authorized until monitoring and studies clearly indicate that additional grazing would be allowed (Table 2-13). Grazing systems identified in the proposed action (Table 2-7) would be implemented in this alternative. Water development projects, pasture fences and vegetation manipulation are identified in Table 2-14 and shown on Map 2-2 inside back cover. Administrative procedures and monitoring programs described in the proposed action would be followed.

TABLE 2-13

Proposed and Existing Use
Alternative 3 Increased Livestock Use

	Proposed Use	Existing Use
Livestock	65,217 AUMs	43,641 AUMs
Wildlife	1,864	932
TOTALS	67,081 AUMs	44,573 AUMs

*Five-year average licensed active use.

TABLE 2-14

Proposed Range Improvements
Alternative 3 Increased Livestock Use

Allotment	Wells No.	Pipelines Mi.	Troughs No.	Reservoirs No.	Storage Tanks No.	Fences Mi.	Cattleguards No.	Roads Mi.	Vegetation Manipulation Acres	
AEC Riverfield	1		4		1	26	2		Spray & seed	4,977
Big Butte	1	9	5		3				Seed Burn or chain	4,800 44,000
Big Desert	3				1	10.5		5	Plow & seed	2,100
Bowers						.5			Burn or chain	320
Cedar Butte									Burn or chain	9,547
Cinder Cone		1.5	5						Burn or chain	4,439
Cox's Well		2		3	1	3.5			Spray & seed	3,600
East Butte		1.5	2						Seed	500
Hells Half-Acre						.75				
Houghland		4	4		1	2			Burn or chain Seed	5,000 4,500
Huddles Hole										
Judge						.75			Seed	30
Klempel						1.5			Burn or chain	320
Moonshine	1	5	4		1	2	1		Burn or chain	4,724
Mooreland										
Muirbrook		Eliminate	grazing	Use		2.5				
No. 2 Well		6	4						Seed	4,000
Quaking Aspen	1				12	20.5	3		Plow & seed	4,500
Riverfield			4			2	2		Plow & seed	2,300
Rock corral	1	9	4		1					
Rudeen	1				2	3	1		Burn or chain	2,000
Smith					2				Spray Plow & seed	11,000 2,500
Springfield						3		3	Seed Burn or chain	3,000 18,000
Sunset						4	3		Spray	3,636
Webb										
TOTALS	9	38	36	3	25	82.5	12	8		152,893

Source--URA-4 natural potential and land treatment potential.

Note--no spring developments are proposed.

Spray & seed	8,577
Seed	16,830
Burn or chain	101,350
Plow and seed	11,400
Spray	14,736
	152,893

TABLE 2-15

Project Development and Maintenance Cost
Alternative 3 Increased Livestock Use

Project	Proposed Unit	Unit Cost	Total Cost	Existing Project	Maintenance Responsibilities	Annual Maint. Cost/Unit	Annual Maint. Cost Existing & Proposed
Pasture fence (miles)	82.5	$2,600	$214,500	111	Permittee	$80	$15,780
Pipelines (miles)	38	$5,000	$190,000	.25	Permittee	$200	$5,650
Well	9	$35,000	$315,000	3	BLM	Unknown	Unknown
Springs	-	-	-	1	BLM	$50	Unknown
Reservoirs	3	$8,000	$24,000	34	BLM	$100	$3,700
Brush Control (acres)	116,086	$7	$812,602	3,240	BLM	Unknown	Unknown
Brush Control & Seed (acres)	36,807	$14	$515,298	39,264	BLM	Unknown	Unknown
Troughs	36	$1,000	$36,000	Unknown	Permittee	Unknown	Unknown
Storage Tanks	25	$6,000	$150,000	1	BLM	Unknown	Unknown
Cattleguards	12	$3,500	$41,000.	20	BLM	Unknown	Unknown
Roads (miles)	9	$4,500	$40,500	Unknown	BLM	Unknown	Unknown
	TOTAL		$2,338,900				

Under this alternative, increased levels of land treatment are proposed. Sagebrush would be controlled through burning, spraying or chaining on 116,086 acres. An additional 36,807 acres would be seeded and receive brush control. These range projects would increase livestock forage production. Project size and species limitations would maximize livestock forage production. Livestock reductions would be made during and following land treatment to ensure adequate rest for plant recovery or establishment.

This alternative would cost about $2,238,900 to implement (Table 2-15). Project implementation would occur in the same sequence and during the same time period described for the proposed action. Project stipulations would be the same as the proposed action.

ALTERNATIVE 4

GRAZING REDUCTIONS WITH MINIMAL RANGE IMPROVEMENTS

This alternative is proposed in the event that there are limited range betterment funds. It would be an attempt to improve ecological condition and eventually restore AUMs (Table 2-16).

Vegetation manipulation would be limited to burning on poor and fair condition range only. Projects would be built on allotments receiving reductions, except for Rock Corral and Big Desert sheep allotments. The proposed projects are necessary for implementing grazing systems and improving livestock distribution. Range improvements are listed by allotment in Table 2-17 and shown on Map 2-3 inside back cover. Livestock reductions would be made during and following land treatment or temporary fences used to ensure adequate rest for plant recovery or establishment. Administrative procedures and monitoring programs described in the proposed action would be implemented.

The proposed well in Rock Corral would provide water to portions of adjacent allotments. These areas are in good condition but are inaccessible due to lack of water. Range improvements proposed for the Big Desert sheep allotment would establish an alternative sheep drive trail and restore the existing drive trail. A well is also planned to provide water for improved livestock distribution.

This alternative would cost about $654,600 to implement (Table 2-18). Project implementation would occur in the same sequence and during the same time period described for the proposed action.

TABLE 2-16

Proposed and Existing Use
Alternative 4 Grazing Reductions
With Minimal Range Improvements

	Proposed Use	Existing Use
Livestock	59,917 AUMs	43,641 AUMs*
Wildlife	1,864	932
TOTALS	61,781 AUMs	44,573 AUMs

*Five-year average licensed use.

INTERRELATIONSHIPS

The BLM's programs and proposals are closely related to the programs of other agencies and individuals. The following interrelationships exist.

Environmental Protection Agency

The Environmental Protection Agency (EPA) has been given initial responsibility for implementing Section 208 of the Federal Water Pollution Control Act Amendment of 1972. Under this Act and Executive Order 12088, the BLM is required to control water pollution that originates from large areas of public land (non-point source pollution).

U.S. Fish and Wildlife Service

The Fish and Wildlife Service conducts predator control in the EIS area under a joint agreement with the BLM, Department of Energy and the Idaho Department of Fish and Game. The control consists of aerial shooting and limited trapping of coyotes, mostly during the fall, winter and early spring. No chemical toxicants are used. The Fish and Wildlife Service also serves as the consulting agency under the Endangered Species Act of 1973. Informal consultation was conducted relative to threatened and endangered plants within the EIS area.

Idaho Department of Fish and Game

There has been close coordination between the BLM and the IDF&G in developing the proposed action. The IDF&G has cooperated with the BLM in determining existing big game numbers and projecting desirable herd size for the EIS area by 1995. Joint studies are being conducted to determine winter ranges, migration routes and strutting grounds. Also, the IDF&G would review all proposals for chemical vegetation treatment.

TABLE 2-17

Proposed Range Improvements Alternative 4
Grazing Reductions with Minimal Range Improvements

Allotment	Wells No.	Pipelines Mi.	Troughs No.	Reservoir No.	Storage Tank No.	Fences Mi.	Cattleguards No.	Roads Mi.	Vegetation Manipulation Acres
Big Butte		5	3			8			Burn 1,200
Cox's Well		2		3	1				
No. 2 Well		6	4						Burn 12,000
Quaking Aspen	1				1	14	3		Burn 2,500
Rudeen						3	1		Burn 2,000
Smith									Burn 5,000
Springfield		2	4			3			Burn 15,000
Sunset						4	3		Burn 2,500
Big Desert	1				1			5	Burn 18,000
Rock Corral	1	9	4		1				Plow and Seed 4,800
TOTALS	3	24	15	3	4	32	7	5	63,000

TABLE 2-18

Project Development and Maintenance Cost
Alternative 4 Grazing Reductions with Minimal Range Improvements

Project	Proposed Unit	Unit Cost	Total Cost	Existing Projects	Maintenance Responsibilities	Annual Maint. Cost/Maint.	Annual Maint. Cost Existing & Proposed
Pasture fence	32 miles	$2,600	$83,200	111	Permittee	$80	$11,440
Pipeline	15 miles	$5,000	$75,000	.25	Permittee	$200	$3,050
Well	3	$35,000	$105,000	3	BLM	-	-
Reservoir	3	$8,000	$24,000	34	BLM	$100	$3,700
Brush Control	40,000 acres	$7	$281,400	3,240	BLM	Unknown	
Troughs	15	$1,000	$15,000	Unknown	Permittee		
Storage Tanks	4	$6,000	$24,000	1	BLM		
Cattleguards	7	$3,500	$24,500	20	BLM		
Roads	5 miles	$4,500	$22,500	Unknown	BLM		
			$654,600				

State Historic Preservation Office

As suggested by the memorandum of agreement between the Advisory Council on Historic Preservation and the State Historical Preservation Office (SHPO), a Class II cultural resource inventory was designed and performed. A final report was submitted to the SHPO archaeologist for review and comment. The SHPO site locational data was used in estimations of cultural site density, diversity and distribution. A cultural resource mitigation plan will be submitted to the SHPO. Final estimates of impacts of the proposed action and alternatives will be discussed with the SHPO archaeologist.

Private Land

About 30,700 acres of private land are located within allotment boundaries. Grazing use of public lands is dependent upon the capability of private lands to sustain livestock during early spring until the forage on public lands is ready for grazing. Private lands along the drainage bottoms have been used primarily for the production of forage crops to sustain livestock operations through winter months. Most private lands are dependent upon additional federal or State lands to sustain a yearlong cattle operation.

U.S. Department of Energy

The U.S. Department of Energy (DOE) has a withdrawal on 213,850 acres of public land in the Big Butte Resource Area. The BLM administers grazing on 34,411 acres of the withdrawal. The DOE is consulted about grazing activities which take place on the withdrawal.

COMPARATIVE ANALYSIS OF IMPACTS

Based on the information and analysis presented in Chapters 3 and 4, a comparative analysis of the beneficial and adverse impacts of the proposed action and alternatives is presented in Table 2-19.

TABLE 2-9

Comparative Analysis of Impacts

Note: Except where noted in parentheses in the left-hand column, Alternative 1 represents the present situation.

	Proposed Action	Alternative 1 No Action	Alternative 2 No Livestock Grazing	Alternative 3 Increased Livestock Use	Alternative 4 Minimal Range Improvement
Initial Stocking Rate	59,917	65,217	----	65,217	59,917
VEGETATION					
Production in AUMs	59,917	59,919	59,917	59,917	59,917
20-year projection (AUMs)	91,683	71,159	78,327	91,363	88,862
Condition					
Good (17%)	36%	21%	32%	27%	35%
Fair (49%)	49%	55%	48%	55%	52%
Poor (7%)	2%	8%	5%	4%	3%
Treated and Disturbed (27%)	12%	16%	15%	14%	10%
Grazing System					
Rest Rotation (0%)	12%	0%	0%	12%	12%
Deferred Use (10%)	40%	10%	0%	40%	40%
Seasonal (90%)	48%	90%	0%	48%	48%
Cover (50%)	61%	60%	61%	61%	62%
SOILS & WATER RESOURCES					
Affects of Erosion on 25 Allotments					
Decreasing	12	1	23	6	11
No Change	9	12	2	11	14
Increasing	4	12	0	8	0

	Proposed Action	Alt. 1	Alt. 2	Alt. 3	Alt. 4
TERRESTRIAL WILDLIFE					
Antelope (population 540)	+100%	No change	No change	Stable to slight drop	+39%
Mule Deer (325)	+100%	No change	No change	No change	+39%
Sage Grouse (population)	+100%	No change	No change	Stable to slight drop	+11%
Non-game animals (population)	Slight increase	No change	No change	Locally heavy impacts	No change
Sensitive Species (prey base)	Some changes in prey base due to vegetation treatments.	No change	No change	Major changes in prey base due to vegetation treatments.	Some changes in prey base.
CULTURAL RESOURCES					
Forage Allocations	Little change anticipated over present situation (trampling and erosion at 35 sites continue).	No change (present impacts, trampling, soil erosion continue).	Trampling of cultural sites eliminated, soil erosion reduced.	Impacts would be greater than those of proposed action.	Same as proposed action.
Management Systems	Little change anticipated over proposed action. Sites could benefit from elimination of grazing in one allotment and increased vegetation cover.	No change	Trampling eliminated, soil erosion reduced.	Impacts greater than for proposed action.	Same as proposed action.
Range Improvements	Vegetation manipulation poses severe threat to sites regardless of mitigation levels and methods.	No change	No damage from vegetation manipulation. No new access roads for unauthorized vehicles.	Impacts more severe and extensive than expected for proposed action.	Fewer inadvertant impacts from vegetation manipulation and other range improvements.

	Proposed Action	Alt. 1	Alt. 2	Alt. 3	Alt. 4
	New roads could provide unwanted access to some sites. Mitigation should eliminate adverse impacts of projects.		relic collecting		projects
VISUAL RESOURCE MANAGEMENT					
Vegetation Manipulation	2,100-acre seeding on Big Butte incon sistent with VRM Class II area.	No change	No change	2100 acre seeding in Big Butte inconsistent with VRM Class II area.	All activities consistent with VRM ratings.
Other	All projects consistent with VRM classes.	No change	No change	All projects consistent with VRM classes.	All projects consistent with VRM classes.
RECREATION					
Hunter days	50% increase*	No change	No change	10% decrease*	40% decrease*
Big Game	10% increase*	No change	No change	10% decrease*	10% decrease*
Upland Game	No chanage	No change	No change	No change	No change
ORV user days	Increased ORV opportunities, but no increase in number of visitor days.	No change	No change	Increased ORV opportunities, but no increase in number of visitor days.	Increased ORV opportunities, but no increase in number of visitor days.
SOCIAL	No major impact on the ranching way of life.	No major impact on the ranching way of life.	There would be a major disruption of family ranching units.	No major impact on the ranching way of life.	No major impact on ranching way of life.

Element	Proposed Action	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Change in Rancher Income (annually)					
Years 1-5	+$121,000	No change	-$2.2 million	+$ 81,000	+$121,000
6-10	+$ 45,000	No change	-$2.2 million	+$ 45,000	+$ 45,000
11-15	-$ 10,000	No change	-$2.2 million	-$ 10,000	No change
16-20	-$ 65,000	No change	-$2.2 million	-$ 65,000	-$ 46,000
After 20	-$120,000	No change	-$2.2 million	-$120,000	-$ 92,000
Range Improvements					
Construction					
Total	$1.8 million	$ -0-	$ -0-	$2.3 million	$655,000
Spent Locally	$326,000	$ -0-	$ -0-	$405,000	$120,000
Maintenance					
Total (annually)	$ 27,000	$ -0-	$ -0-	$ 27,000	$ 10,300
Spent Locally (annually)	$ 16,000	$ -0-	$ -0-	$ 16,000	$ 6,200
Recreation-Related Income Change					
Years 1-5	+$ 1,300	-$ 9,000	No change	-$ 686	+$ 871
6-10	+$ 2,600	-$ 18,000	No change	-$ 1,371	+$ 1,700
11-15	+$ 3,900	-$ 27,000	No change	-$ 2,056	+$ 2,600
16-20	+$ 5,300	-$ 37,000	No change	-$ 2,700	+$ 3,500
After 20	+$ 5,300	-$ 37,000	No change	-$ 2,700	+$ 3,500
Secondary Income Changes					
Year 1-5	+$ 27,000	-$ 800	-$486,000	+$ 18,000	+$ 27,000
6-10	+$ 10,000	-$ 1,600	-$486,000	+$ 10,000	+$ 10,000
11-15	-$ 1,500	-$ 2,500	-$486,000	+$ 2,200	+$ 210
16-20	-$ 14,000	-$ 3,300	-$486,000	-$ 14,000	-$ 10,000
After 20	-$ 14,000	-$ 3,300	-$486,000	-$ 14,000	-$ 10,000
Change in Employment					
Initial	+ 15	-0-	- 191	+ 11	+ 11
After 20 years	- 4	- 2	- 191	- 4	- 4
Regional Net Present Worth	+$1.1 million	-$212,000	-$ 27.8 million	+$827,000	+$833,000
Ranch Consolidations and Conversions	No Impact	No Impact	50	No Impact	No Impact

Note: Figures represent total net changes for the EIS area.

Chapter 3

Affected Environment

cheatgrass

INTRODUCTION

This chapter describes the general setting of the Big Desert Grazing Environmental Impact Statement (EIS) and the environmental components which would be significantly affected by the proposal or alternatives.

The EIS area lies west of the Snake River, south of Arco and north of American Falls in eastern Idaho. The general relief of the Big Desert planning unit is characterized by flat to rolling plains, lava outcrops, lava flows, cinder cones and other volcanic extrusions. There are no intermittent streams or well-defined drainages, except for the Snake River which borders the unit to the east and south. The land slopes gently to the southeast with the lowest elevation being 4,350 feet above sea level (at an area adjacent to the American Falls Reservoir northwest of American Falls). The highest elevation is on top of Big Southern Butte (7,560 feet) in the northern portion of the planning unit. Most of the planning unit is from 4,600 to 5,500 feet in elevation.

Air quality in the area is generally good. The quality declines for short periods when agricultural lands are burned or cultivated.

The climate has wide ranges in seasonal and daily temperatures, wind directions and velocities, and precipitation. Total annual precipitation varies from 8.61 inches at the Aberdeen Experiment Station in the southeast, to 16.25 inches at Craters of the Moon National Monument in the northwest. Most precipitation occurs during November, December, January, May and June.

Area temperatures range from a maximum high temperature of 104° F to a minimum low temperature of -37° F. Prevailing wind direction is from the southwest.

NOTE: Seven fold-out maps for this chapter lie at the very end of the document.

VEGETATION

Introduction

The Big Desert EIS has seven major vegetation types: big sagebrush, threetip sagebrush, black sagebrush, non-productive, crested wheatgrass seedings, and river bottoms. Vegetation types are shown on Map 3-1.

Natural disturbance from fire has created another vegetation type (labeled disturbed on Table 3-1) which is in various stages of plant succession. Within these major types there are ecological sites, characterized primarily by changes in vegetation composition, soils and precipitation. Table 3-1 tabulates acreage of each ecological site by allotment. The site descriptions are available for review at the Idaho Falls District office. Site descriptions for the 2,238 acres of river bottoms have not been developed at this time.

TABLE 3-1
Ecological Site Acreage by Allotment

Allotment	Artrw/Agsp[1] Loamy[2] 8-12"[3]	Artrw/Agsp[1] Shallow Stony 8-12"	Artrw/Agsp[1] Shallow Stony 8-12"	Artrw/ Agsp[1] Loamy 12-16"	Artrw/ Elc13[4] Loamy 12-16"	Artr4/Carex[5] Playa[6]	Ararn/Agsp[7] Shallow Stoney 8-12"	Agcr[8] Seeding	Rock	Disturbed[9]	Total [10]
AEC Riverfield	11,687	1,421	165		1,159	137	61		1,424		16,054
Big Desert	58,750	16,995	3,638	16,068	8,678	1,401		27,991	24,698	90,564	248,783
Big Butte	13,378	3,515		15,916	1,662	51	911	3,200	5,926	83	44,642
Bowers		318			2						320
Carter	1,776	75			70		4		24		1,949
Cedar Butte	6,186	314		1,875	1,221	29	275	2,007	629	86	12,622
Cinder Cone	351	535	117	5,631	2,630			960	1,475	353	12,052
Cox's Well	7,215	320	66	4,164	1,032		53		1,042	3,452	17,344
East Butte	879	47			45		6	172	5	29	1,183
Hells Half-Acre	176										176
Houghland	9,639	817		3,178	1,761	139		739	1,129	5,761	23,163
Huddles Hole		33		293	293				33		652
Judge										80	80
Katseanes	815	403							57		1,275
Klempel	189	131									320
Moonshine	5,452	411			78		209		234		6,384
Mooreland	3,812	1,342	435						128	1,752	7,469
Muirbrook										120	120
Nipples	2,782	534			18	78	78		112		3,602
No. 2 Well	12,904	181		1,945	2,074	674		2,319	1,011	2,788	23,896
Quaking Aspen	26,687	2,682	909	17,950	10,310	96	33	376	5,680	5,309	70,032
Riverfield	5,124	815	290		452			619	814		8,114
Rock Corral	94	1,133		5,137	1,181	2		1,031	2,079	95	10,752
Rudeen	5,500	2,522							2,131		10,153
Smith	8,927	1,317	793	5,752	835	42	33	356	2,178		20,233
Springfield	9,348	960		7,092	4,181	125		6,973	1,901	3,966	34,546
Sunset	2,181	772	982	4,316	1,195				1,575		11,021
Webb	31	729									760
Whitehead	5,120	585							132		5,837
State Twin Buttes	904	259							37		1,200
TOTALS	199,907	39,166	7,395	89,317	38,877	2,774	1,663	46,743	54,454	114,438	594,734

[1] Artrw/Agsp - vegetation characteristic, Wyoming big sagebrush/bluebunch wheatgrass.
[2] Loamy - a soil of sand, clay, silt and organic matter.
[3] 8-12" - precipitation zone.
[4] Artrt/Elc13 - vegetation characteristic, basin big sagebrush/basin wildrye.
[5] Artr4/Carex - vegetation characteristic, threetip sagebrush/sedge.
[6] Playa - desert basin, sometimes covered with water
[7] Ararn/Agsp - vegetation characteristic, black sagebrush/bluebunch wheatgrass
[8] Agcr - crested wheatgrass
[9] Disturbed - acres disturbed by fire
[10] Total - does not include Snake River bottom land (2,238 acres)

Rangeland Condition

Rangeland condition is the present state of the vegetation on a range site in relation to the climax (natural potential) plant community for that site. It is an expression of the degree to which the kinds, proportions and amounts of plants in a plant community relate to the climax community for the site. Rangeland condition is basically an ecological rating of the plant community.

Rangeland condition in the EIS area is depicted in Map 3-2. Condition class ratings for vegetation within the grazed portion of the Big Desert EIS area are as follows.

Good	104,129 acres	(18 percent of area)
Fair	279,460 acres	(48 percent of area)
Poor	36,113 acres	(7 percent of area)
Seeded	46,743 acres	(8 percent of area)
Burned	114,437 acres	(19 percent of area)

A condition class summary by allotment is present in Appendix E-1. (Note: The Snake River bottomland (riparian land, 2,238 acres) was not inventoried. Highest value of these lands is for wildlife habitat; habitat condition for this acreage is considered good.)

Apparent Trend

The trend of rangeland condition is a decision whether the range is improving, deteriorating or remaining stable. Trend is usually referred to as upward, downward or static. These factors are used to determine trend: changes in vegetation composition, abundance of seedlings, amount of plant residues, plant vigor, and condition of the soil surface. Because only one year's trend data is available, it is referred to as apparent trend.

Present Trend Data

Upward	900 acres	(less than 1 percent of area)
Downward	100,642 acres	(17 percent of the area)
Static	493,192 acres	(83 percent of the area)

Range trend estimates by acres and allotment are presented in Appendix G-2. (Note: The Snake River riparian land, 2,238 acres, is estimated to be in static trend.) Table 3-2 estimates trend by allotment.

Phenology

Forage plants depend on adequate carbohydrate reserves to start growth in the spring. When spring growth starts, about 50 percent of the

TABLE 3-2

Trend of Condition*

Allotment #	Allotment	Pasture	Trend
1042	Quaking Aspen	All Pastures	Static
1044	Sunset	All Pastures	Static
1045	Smith	All Pastures	Downward Trend Plot
1046	Big Butte	All Pastures	Static
1049	Huddles Hole	All Pastures	Static
1052	Riverfield	All Pastures	Static
1054	AEC Riverfield	All Pastures	Static
3005	Hell's Half-Acre	All Pastures	Static
3009	East Butte	All Pastures	Static
3009	East Butte	Seeding	Downward
3015	Moonshine	All Pastures	Static
3025	Moreland	All Pastures	Static
7000	Big Desert (sheep)	Cross Over from Shoshone.	Downward
7000	Big Desert (sheep)	Sheep Driveway	Downward
7000	Big Desert (sheep)	Other Portion of allotment.	Static
7001	Houghland	All Pastures	Static
7002	Cinder Cone	All Pastures	Static
7003	Rock Corral	All Pastures	Static
7004	Cox's Well	All Pastures	Static
7005	Cedar Butte	All Pastures	Static
7006	No. 2 Well	All Pastures	Downward Trend Plot
7007	Springfield	All Pastures	Downward Trend Plot
7011	Muirbrook	All Pastures	Static
7012	Webb	All Pastures	Downward
7013	Judge	All Pastures	Static
7015	Bowers	All Pastures	Static
7016	Klempel	All Pastures	Static
7017	Rudeen	All Pastures	Static

*Trend information is not available at this time for Section 15 allotments along the Snake River.

carbohydrate reserves are used to produce the first 10 percent of the annual growth (Cook 1966). Grazing during the spring, when plants are drawing heavily on root storage, can deplete carbohydrate reserves and leave the plant low in vigor. Typical grass species stop drawing on reserves and start building root reserves at about the four leaf emergence state (Cook 1966).

In much of the Big Desert EIS area, the grazing of key grass species (bluebunch wheatgrass, Indian ricegrass, needle-and-thread) during critical spring growth stages has decreased vigor. To prevent this, spring turn-out dates have been delayed until range readiness (see Table 2-7). Range readiness is the stage of growth of important palatable range plants and the condition of the soil which permit grazing without causing excessive soil compaction or endangering the ability of the plants to maintain themselves.

Range readiness varies in the EIS area according to precipitation zones. An area of higher precipitation occurs west of Big Southern Butte. More snow accumulates and remains longer in this area, so range readiness normally occurs about May 1. The rest of the EIS area is ready about April 15. Normally, crested wheatgrass seedings are ready for grazing around April 10.

Cover

Cover is the amount of ground surface protected by canopies of living vegetation, litter (dead organic matter), and variously sized stones. According to Stoddart, Smith and Box (1975), cover plays an important part in a plant's ability to produce forage. The less vegetation cover, the less effectively water can infiltrate the ground. Reduced infiltration increases runoff, which in turn reduces the effectiveness of precipitation and makes ranges more arid than normal. Thus, the percentage of ground protected by vegetation cover can have a pronounced influence on forage production.

Vegetation cover in the EIS area is quite variable, especially on crested wheatgrass seedings, fire disturbed areas, and poor condition range. On these areas, annual vegetation cover varies drastically, depending on annual precipitation and the corresponding successful germination of annual plants (such as cheatgrass, mustards and Russian thistle). On areas of better ecological condition, perennial plants may provide less cover than annuals in good precipitation years, However, perennials provide a more stable community to offset the lack of annuals in low precipitation years.

Cover on allotments adjacent to the river is about 80 percent including the overstory of cottonwoods, willows and squawbush. Cover was estimated with step-point transects at clipping plot and range condition write-up locations (see Appendix C, Methodology). Ecological site effective ground cover is summarized in Table 3-3. Cover throughout the EIS area now averages 59 percent.

TABLE 3-3

Ecological Site Effective Ground Cover*
by Condition Class

Ecological Site	Vegetation Type	Poor	Fair	Good
Loamy 8-12"	Artrw/Agsp	46%	51%	58%
Loamy 12-16"	Artrw/Agsp	50	55	62
Loamy 12-16"	Artrt/Elci	50	60	70
Shallow Stony 8-12"	Artrw/Agsp	60	65	70

*Cover includes vegetation, rock, and standing and down litter.

Productivity

Vegetation productivity was expressed as the air dry weight (pounds per acre) of the above ground, annual, live-green production. The 1979 clipping studies were the primary measure of ecological site productivity. The clipping studies were conducted during a drought year, so production data was corrected to reflect a normal year's production (see Appendix C, Data Analysis).

Table 2-4 shows production in AUMs available to wildlife, livestock and non-consumptive uses for each allotment.

Production for river allotments has not been determined. Stocking rates are based on allotment evaluations and consultations with lessees. Stocking rates would be monitored closely to determine whether or not additional adjustments are needed. Monitoring would include utilization studies and actual use data at the end of each grazing season.

Suitability

Suitability refers to the capability of forage-producing land to be grazed by livestock on a sustained yield basis without damage to the basic resources. Suitable range should not be confused with usable range. Many areas can be grazed by livestock and are therefore usable, but may not be suitable for grazing on a long-term basis because of the resulting damage to the area or adjacent areas.

Three criteria were used to determine range suitable for livestock grazing in the EIS area:

1. steepness of slope (50 percent or less),
2. distance from water (2 miles or less),
3. soil erosion (Soil Surface Factor 60 or less).

All range in grazing allotments is suitable or can be made suitable by providing livestock water except 2,998 acres (unsuitable because of slope). Of the 2,998 unsuitable acres, 735 acres are in Cinder Cone allotment, and 2,263 acres are in Big Butte allotment. All allotments adjacent to the Snake River are considered suitable (2,238 acres).

Threatened and Endangered Plants

During 1979-80 field season, Ralston and Associates surveyed a portion of the Big Desert EIS area for rare plants. Range survey crews also checked for threatened and endangered plants. No plant species were found that are now federally listed for protection. The final report, Inventory of Threatened and Endangered Plants Located in the Big Desert, is on file at the District office.

Because no threatened or endangered plants have been identified in the area, no further mention of impacts will be made in the EIS. Future discoveries, if any, will be dealt with case by case and appropriate mitigations developed to protect them.

Riparian Vegetation

The riparian zones occurring along the Snake River include the most environmentally sensitive vegetation types in the EIS area because of the wildlife habitat they provide. There are 2,238 acres of the riparian type, representing less than 1 percent of the total area. Riparian vegetation lies on river banks and islands. Cottonwood, skunkbush, willow and rose overstories with bluegrass and iris understories characterize the riparian areas.

Seventeen Section 15 allotments, ranging from 30 to 382 acres, are located along the River (see Appendix A).

Riparian vegetation also occurs along the Big Lost River. Because the river's flow fluctuates widely seasonally and annually, the vegetation is not high quality, and forage production is not heavy. Three allotments have access to the river: Quaking Aspen, Riverfield and AEC Riverfield. About 15 miles of river is in the grazed portion of the EIS area; livestock have access to about two to three miles.

Livestock Grazing

Cattle and sheep graze in the Big Desert EIS area. Cattle account for 43 percent of livestock use. Cattle graze on Section 3 allotments from April 1 to January 31. Sheep account for 57 percent of livestock use. Sheep grazing takes place from April 1 to June 30 and from October 16 to February 21. For class of livestock and season of use, see Table 2-7.

There are 75 livestock operators licensed for use in 30 Section 3 allotments. Five Section 3 allotments are grazed by sheep, and all other allotments are grazed by cattle.

Cow-calf and ewe-lamb operations are the two major types of ranching that occur in the area.

Most cattle permits are part of cow-calf operations, consisting of a base breeding herd of cows and bulls. Cows calve between March and April, and calves are usually weaned and sold in late fall. Cattle are turned onto BLM allotments in the spring. Some remain there throughout the summer, but most are moved to national forest ranges or back to private pasture.

Sheep lamb around February or March. When lambs are old enough to travel (April or May), they are trailed or trucked to BLM allotments. There is a stock driveway withdrawal in the Big Desert sheep allotment (see Map 2-1). In early summer, the bands of sheep are moved across the sheep drive trail to national forest range, State range, or private land in the high country. Many sheep operators belong to the Eastern Idaho or the Idaho Citizens Grazing Association. These groups graze their livestock predominantly on State land and intermingled private land. In the fall, many sheep are moved through BLM range to private cropland. Green feed found on private land is more desirable than dry, native forage on BLM range.

The existing active grazing preference is 65,217 AUMs on public lands within the study area. The 5-year average use has been 43,641 AUMs. This represents 73 percent of the active preference (see Table 2-7).

There are 17 operators with Section 15 leases in a total of 17 allotments. The allotments have been grazed for short periods throughout the year. The active grazing preference on Section 15 allotments is 723 AUMs.

B. SOILS

The Big Desert planning unit has three physiographic regions: the upper Snake River basalt plains, the Snake River flood plain sediments and the Big Lost River flood plains sediments. Most soils are silt loams, loams, some sandy loams that vary in depth, and basalt bedrock. The area has been subdivided into 11 soil associations, which are identified on Map 3-3.

An Order 2 soil survey (see Glossary) was completed for parts of Bingham and Power counties by the U.S. Soil Conservation Service (SCS) in 1973. The SCS and BLM did an Order 3 soil survey (see Glossary) on the remaining area in 1979. These surveys, which meet the National Cooperative Soil survey standards, are available at the Idaho Falls BLM District office.

The soil survey was used to evaluate land use potentials; help establish potential, natural plant communities; project development; and predict erosional responses. When analyzing the effects of livestock grazing on soils, three major soil parameters are affected: soil compaction, soil erosion, and soil productivity or fertility. Compaction decreases infiltration rates, resulting in increased runoff, thus increasing the potential for soil erosion.

Information on present soil compaction in the area is very limited, making it difficult to determine the magnitude of the problem. Where heavy livestock utilization has occurred, trampling has increased soil compaction around watering areas (permanent and water hauling sites), salting locations and localized trailing areas.

Current soil erosion is a reflection of past use. See Appendix F-1 for Present Annual Sediment Yield by Allotment. Contributing factors to accelerated erosion are soil compaction and a decrease in vegetative and litter cover. Erosion reduces fertility by removing topsoil that contains most of the nutrients and organic material, reducing the eroded soil's fertility.

Except for soil association 8 (see soil Map 3-3), most soils are silt loams, loams on gently sloping basalt plains, and loams on flat river terraces. Soil association 8 is sandy loam subject to wind erosion more than water erosion.

Because rainfall, soil texture and slope are quite similar throughout the area, the degree of vegetation cover becomes the largest single factor affecting erosion rates for the proposed action and alternatives.

Erosion condition classes developed for the area are based on soil surface factors (BLM Manual 7317) and are compiled by acreage in Table 3-4.

The erosion classes and trend were developed from field observations which include evidence of soil movement, surface litter, gullies and flow patterns. The area shows no severe erosion condition class. Critical

TABLE 3-4
Erosion Condition Classes

Erosion Class	Soil Surface Factor	Acres
Stable	0-20	204,069
Slight	21-40	176,603
Moderate	41-60	189,984
Critical	61-80	26,316
Severe	81-100	0
	TOTAL	596,972

erosion condition is indicated in parts of four allotments (Cox's Well, Big Butte, Cedar Butte and Big Desert) totaling 4 percent of the area. Trend studies showed 9 percent deteriorating, 3 percent improving and 88 percent static.

Accelerated soil erosion is not now a serious problem; the conditions and trend evaluation substantiate this. Soil loss is computed at .2 tons per acre per year, placing the area in a low erosion class. Sediment yield was determined by the Pacific Southwest Interagency Committee (PSIAC) method (see Appendix F-1 for methodology and breakdown by allotment). Following are PSIAC standards for sediment yield.

	Tons/Acre
Slight	Less than 1.2
Moderate	1.2-2.2
Severe	2.3 and greater

C. WATER RESOURCES

The Big Desert planning unit lies in the Upper Snake River Basin. About two-thirds of the area drains into the Snake River, and one-third drains into the Big Lost River area.

Watershed Condition

As noted in the soils section, most of the watershed is in a moderate to stable erosion condition. Runoff occurs mainly from seasonal snowmelt, a great deal of which flows into small depressions.

Two watershed have had floods and sediment damage to local communities: the Twin Buttes watershed near Tabor, Rockford and Pingree; and the Flat Top watershed near Aberdeen. Less than one-third of these watersheds lies on public lands. Studies conducted by the U.S. Soil Conservation Service reveal that most of the problem originates on private and State lands. Flooding problems to several communities are aggravated by present grazing practices on about one-third of the watershed.

Water Availability

The Snake River forms the eastern boundary of the unit, and the Big Lost River cuts through the northwestern portion of the unit. Other than these rivers and some springs on Big Southern Butte, all water obtained in the unit is from deep wells and internal playa drainage basins. These features are shown on the map of existing range developments (see Map 2-1).

Water Use

The primary use of runoff is for livestock and wildlife water.

D. TERRESTRIAL WILDLIFE

Introduction

The Big Desert EIS area has seven major vegetation types: big sagebrush, threetip sagebrush, black sagebrush, non-productive, crested wheatgrass seedings, river bottoms and fire disturbed areas. (see Vegetation section in this chapter). Each of these types has distinct habitat areas available for wildlife species.

Most of the EIS area is vegetated by the sagebrush-grass complex (sagebrush, threetip sagebrush and black sagebrush types). These habitats support 69 mammal, 291 bird, and 26 reptile and amphibian species. A species list is available for review at the Idaho Falls District office. Very few species would be significantly affected by the proposed action or alternatives. Species that would be affected most are identified individually in this chapter: antelope, mule deer, sage grouse and some non-game animals and birds. The remaining species that are not significantly impacted will not be mentioned again in this statment for one or more of the following reasons.

1. Populations are low in number or the habitat involved is not critical to the wildlife species.
2. The wildlife species are migratory and habitat is not a limiting factor, or the species occur incidentally.
3. The proposed action or alternatives do not limit the movement of wildlife species or affect a significant amount of habitat to impact the wildlife species.

Threatened, Endangered and Sensitive Species

The bald eagle and possibly peregrine falcon use parts of the unit. Both have habitat requirements associated with large bodies of water and riparian vegetation types. Most of these birds winter around American Falls Reservoir or north of the reservoir near Springfield Bird Haven. Grazing impacts in these areas are expected to be minor. Because a finding of no significant impact was determined by the BLM and U.S. Fish and Wildlife Service, these species will not be mentioned further. Site specific provisions will be developed if and when they are identified.

State sensitive species known to be in the area are the river otter, gyrfalcon, bobcat, ferruginous hawk, long-billed curlew, burrowing owl, pigeon hawk, osprey, spotted bat, trumpeter swan and white-faced ibis. "Sensitive species" is a BLM-Idaho Department of Fish and Game term for species whose restricted range, habitat requirements or low population numbers make them vulnerable to elimination if adverse impacts on populations or habitat occur. The ferruginous hawk, burrowing owl and long-billed curlew are the sensitive species that may be impacted by the proposed action or alternatives. The remaining species depend primarily on private land for habitat requirements or stay in the area for very short periods.

Antelope

Antelope populations in the Big Desert are relatively sparse as shown on Table 3-5. The numbers do not fluctuate much throughout the year. Antelope crucial areas have been identified on Map 3-4. Antelope are found within these crucial areas primarily in isolated concentrations around Quaking Aspen Butte, Tea Kettle and Split Top Butte. Fawning areas total about 142,500 acres.

The largest summer concentration of antelope is near the Dry Lake bed just west of the nuclear waste dump area. About 225 animals have been recorded.

Antelope winter range is generally unrestricted; distribution is affected more by weather patterns than anything else. Two wintering areas, each with about 100 animals, were located in 1979 and are shown on Map 3-4. A third wintering area occurs on the agricultural land and public land boundary from the Wapi lava flow to Tabor. Most of the antelope in the southern desert spend the winter in this area. Vegetation diversity is the key to good antelope habitat. The more important food species are succulent forbs in summer and sagebrush year-long. Table 3-6 shows the forage preferences of antelope in the Little Lost and Birch Creek drainages as determined by fecal analysis.

TABLE 3-5

Antelope Numbers, Present Population

Allotment	Winter	Spring	Summer	Fall
AEC Riverfield	0	10	10	10
Quaking Aspen	0	100	125	75
Sunset	0	15	15	10
Smith	0	10	5	5
Big Butte	50	25	75	50
Cedar Butte	30	10	10	15
Cinder Cone	0	5	5	5
Rock Corral	0	5	5	5
Cox's Well	0	10	10	10
Houghland	15	50	30	30
Springfield	75	35	20	20
Number 2 Well	20	20	20	20
East Butte	0	10	10	10
Moonshine	0	5	5	5
Carter	0	5	5	5
Katseanes	0	5	5	5
Nipples	0	10	10	10
Whitehead	0	10	10	10
Big Desert	200	125	140	140
Rudeen	25	25	25	25
TOTALS	415	490	540	465

Fecal samples were collected during all seasons of the year in locations near the EIS area. Qualified personnel examined these samples under microscopes and identified plant fragments. This analysis found that antelope depend primarily upon sagebrush in all seasons and forbs in the spring. A complete chart of all identified plant species is available for inspection at the Idaho Falls District office. Table 3-6 shows the diet by season for antelope.

TABLE 3-6

Percent Composition of Fecal Samples of Antelope

Season	Collection Dates	Shrubs	Forbs	Grass	Other	Number of Samples
Winter	Nov 16-Mar 31	87	6	2	5	26
Spring	Apr 1-May 15	82	11	2	5	15
Summer	Jun 15-July 15	87	8	2	3	7
Fall	Oct 1-Oct 31	94	Trace	3	3	9

Antelope habitat condition is shown on Map 3-5. Condition evaluation was based upon ecological range condition evaluations and availability of cover, and the amount of succulent forbs. This information was also used for determining sage grouse habitat. Table 3-7 illustrates the criteria used.

Antelope water requirements vary according to precipitation, evaporation, temperature, and availability of succulent vegetation. Amounts vary from 0.09 to 1.19 gallons per day. Summer distributions of antelope appear to be tied to water availability.

TABLE 3-7

Antelope and Sage Grouse Habitat Condition Criteria[1]

Habitat Condition	Percent canopy cover: Sagebrush	Percent canopy cover: Forb Comp.	Percent composition by weight: Sagebrush	Percent composition by weight: Forb Comp.	Acres Public Land[2]
Excellent	15-30%	>20%	30-50%	>20%	3,950
Good	15-30%	12-20%	30-50%	12-20%	163,670
Fair-1*	30-50%	12%	50-80%	42%	238,610
Fair-2**	10-15%	0	20-30%	0	114,400
Poor-1*	>50%	12%	>80%	42%	82,220
Poor-2**	10%	0	20%	0	174,045

[1] From range condition write-ups. Criteria is the same for antelope and sage grouse.

[2] State land acreages are not included.

* Fair-1 and poor-1 areas have canopy cover which is too thick for good range.

** Fair-2 and poor-2 areas have canopy cover which is too thin for good range.

Mule Deer

The mule deer population in the Big Desert is scattered, but local concentrations can be found. These concentrations are shown on Map 3-6. Mule deer could occur throughout the unit because the necessary food species are present, but water distribution appears to be the limiting factor. Table 3-8 shows the estimated number of mule deer by allotment in the EIS area.

TABLE 3-8
Mule Deer Population Estimates*

Allotment	Winter	Spring	Summer	Fall
AEC Riverfield	10	5	5	5
Quaking Aspen	25	25	10	25
Sunset	10	5	5	5
Smith	15	5	5	5
Big Butte	50	25	25	25
Cedar Butte	15	10	5	10
Cinder Cone	15	5	5	5
Rock Corral	15	5	5	5
Cox's Well	20	5	5	5
Houghland	30	10	5	5
Springfield	15	5	5	10
No. 2 Well	10	0	0	0
East Butte	5	5	5	5
Moonshine	15	5	5	5
Carter	5	5	5	5
Nipples	5	5	5	5
Whitehead	10	5	0	5
Big Desert	40	35	35	35
Rudeen	15	10	10	10
TOTALS	325	175	145	175

*These figures are reasonable estimates for areas grazed by livestock. Population estimates vary among agencies. Attempts to quantify numbers by allotment for forage allocation are subject to debate because the animals do not remain in one place for any length of time. Use areas vary from year to year depending upon climate, forage availability and habitat conditions.

Sage Grouse

Sage grouse are found throughout the unit, primarily in the sagebrush/grassland habitat type. The most crucial areas for sage grouse are the strutting grounds, and nesting and brood-rearing areas shown on Map 3-4.

Sage grouse are dependent upon sagebrush for food. They eat the tender leaves of sagebrush year-round. Young birds depend on sagebrush and succulent weeds as a source of protein.

Meadow-like areas are good production areas for insects and succulent weeds that the birds need. These areas may be natural seep areas, around water holes, stock tanks or intermittent water sources. Agricultural areas can also be important because of the insect life found in them.

Protection from predators is also an important factor for young birds' survival. Cover is very important around water sources. Large sagebrush plants provide important cover for nesting and wintering areas as well. Without this protection, otherwise good habitat will not be used by sagegrouse.

Strutting grounds are very important sage grouse habitat. Sage grouse have an elaborate and spectacular courtship display. These activities are centered around those strutting grounds where relatively flat terrain and sparse vegetation allows females to see the displays of males. Most nests are located within 2 miles of the strutting grounds.

The Idaho Department of Fish and Game make counts on several strutting grounds to determine population trends. This information is presented in Table 3-9. Generally, the population of sage grouse is increasing throughout the unit.

Table 3-7 gives the criteria used to evaluate the Big Desert for sage grouse and antelope habitat, and the number of acres of each. This information was gathered from numerous publications and the guidelines in Appendix H. The categories of classes (good, fair, poor) are shown on Map 3-5 for sage grouse and antelope.

Non-game Birds and Mammals

The extent of these populations is unknown. They are important to the area's biological stability and as prey for other animals. Seven species of non-game birds nest in the sagebrush/grassland vegetation type. These include the sage thrasher, sage sparrow, Brewer's sparrow, western meadowlark, loggerhead shrike, short-eared owl and horned lark. Sage thrasher and sage sparrow are obligate species, meaning they depend totally upon sagebrush. The area west of Atomic City is identified as a large concentration area for sage sparrow.

Many small mammals are present in the Big Desert. The species primarily found here include chipmunks, ground squirrels and jackrabbits.

TABLE 3-9

Summary of data on the maximum number of male sage grouse on the Big Desert strutting ground unit, Region 5, 1969-1980[1]

Year	Rock Lake	Jugalard Lake[2]	Heriott Lake[2]	Big Butte Area	Railroad	Chipping Ground	Antelope Lake
1969	75	144	69	44			
1970	89	83	101	52			
1971	69	62	52	64			
1972	38	69	25	5			
1973	19	47	20	*			
1974	20	28	25	38	7	12	
1975	77	26	30	53	21	0	
1976	95	30	30	62	*	11	
1977	96	89	87	78	*	28	
1978	109	79	65	73	7	*	
1979	102	40	41	54	12	*	121
1980	150	19	40	60	15	*	58
Mean	78.5	59.6	48.7	49.83	8.85	12.75	Insufficient data
Slope	6.28	-5.58	-1.47	2.72	0.46	5.9	Insufficient data

[1] Data from the Idaho Department of Fish and Game.

[2] Declining populations based on trend line analysis.

* Did not count.

Sensitive Species

Ferruginous hawks are most often found in the sagebrush/grassland type. These hawks nest on the ground and are prone to abandon their nests when physically disturbed during the incubation period (March 21 to June 1). Their primary food is jackrabbits.

Long-billed curlews are present from mid-April to August 1. They nest in open, grassy areas on level to rolling hills. They are a ground-nesting species and eat mainly insects.

The burrowing owl nests in abandoned ground squirrel and badger dens. It is found in grassy areas on level to rolling terrain and eats primarily insects and reptiles.

E. CULTURAL RESOURCES

Cultural resource sites in the EIS area which have been accepted to the National Register of Historic places include Experimental Breeder Reactor No. 1 (EBR-1 located on Idaho National Engineering Laboratory withdrawal land) and Goodale's Cutoff (Oregon Trail). Both sites are shown on Map 3-7. EBR-1 is protected from livestock by thick, concrete walls and a high fence. An intensive inventory of the historic trail was completed in 1980. The inventory's final report will identify any trail damage which is directly and indirectly related to livestock grazing. No impacts are known at the present time. However, remains of a stagecoach station associated with the trail are being trampled by livestock.

Of 170 known sites (historic and prehistoric), 13 sites or 7.6 percent of the total are deteriorating from trampling. Prehistoric sites affected by trampling include temporary campsites and chipping stations (lithic workshops). One historic site is being adversely affected by livestock trampling.

Trampling can also accelerate erosion at cultural resource sites. One historic site and 18 prehistoric sites are deteriorating from erosion. Two of the 18 prehistoric sites are deteriorating from a combination of erosion and trampling (1 percent of the total number of sites).

Table 3-10 summarizes impacts on known cultural resource sites. Adverse impacts affect 113 historic and prehistoric sites in the EIS area. No impacts have been identified (other than weathering and natural decay) for 54 sites. Changes between present and future situations can be documented by monitoring affected cultural resource sites. Appendix 1-3 describes inventory procedures and site diversity.

TABLE 3-10
Impacts on Known Cultural Resource Sites

Impacting Agent	Historic Sites	Rock Shelter	Quarry	Chipping Station	Temporary Campsite	Rock Structure
Trampling	1	--	--	13	2	--
Erosion	1	--	--	16	2	--
Other*	2	12	1	44	18	3
TOTALS	2	12	1	73	22	3

*Impact not related to grazing.

F. VISUAL RESOURCES

The landscape of the Big Desert is generally an undulating plain, interrupted by lava reefs, fissures, pressure ridges and several prominent buttes. The Snake River and American Falls Reservoir form the area's eastern boundary.

The EIS area lies in the physiographic region known as the Snake River Plain. The area was divided into scenery units similar in topography and land cover types. Each scenery unit was then assigned a Visual Absorption Capability (VAC) of high, intermediate or low. A low VAC rating means the landscape has a poor ability to camouflage man-made additions. These ratings help determine where projects would have the least visual impact on the landscape, the vegetation screening and regeneration potential, slope, aspect, and color/texture contrast when disturbed. For a complete visual resource management description by scenery unit, see Appendix I-1. These units are also identifed on Map 3-7.

G. RECREATION

The grazed public lands within the EIS area are important for a variety of recreational activities. These activities include hunting and fishing, with some camping and off-road vehicle (ORV) use.

Most recreationists are from population centers along the Snake River in eastern and southeastern Idaho and from the small towns of Arco and Atomic City. Visitor use occurs year-round but is concentrated from May through October. For a complete breakdown of recreation use within the area, refer to Appendix I-2.

The Idaho Statewide Comprehensive Outdoor Recreation Plan (SCORP) estimates overall recreation use will increase 75 percent between 1980 and 2000. This would be an annual increase between 3 and 4 percent.

TABLE 3-11

Present Recreation Use Within the EIS Area

Activity	Visitor Days
Hunting	34,197
Fishing	17,387
ORV Use	2,280
Camping	700
Other Recreation	200

H. ECONOMICS

Introduction

Three counties (Bingham, Butte and Minidoka) were studied as the base area or region for the economic portion of this EIS. These three counties were chosen because: (1) 80 percent of Section 3 permittees reside (and presumably trade) in these three counties, (2) 100 percent of the Section 15 permittees reside in these three counties, and (3) there is not a single trade area where a majority of ranchers trade outside these three counties. Idaho counties in which permittees reside but that were not included in the economic study are Bonneville, Blaine, Power, Cassia, Custer, Jerome, Bannock, Kootenai, and Clark, plus San Diego, California. These counties were not included because few permittees lived in them (six or fewer permittees each). Their inclusion would distort the base data, making it difficult to identify the real impacts to the selected counties.

The livestock industry would be the industry most impacted by this proposal. According to the 1974 Census of Agriculture, there were 216,000 cattle and 173,000 sheep in the three-county area with annual feed requirements of 3 million animal unit months (AUMs). Permittees in the EIS area run about 21,000 cattle and 101,000 sheep with total feed requirements of 492,000 AUMs. This represents 16 percent of the total three-county needs.

The EIS area has a total active preference of 66,652 AUMs (not including AUMs on State-managed allotments), or 14 percent of the permittees' total needs. The average actual use is 44,125 AUMs (not including State-managed allotments), or 9 percent of the permittees' total needs. During those times of the year when BLM AUMs are used, generally spring and fall, 36 percent of the permittees' needs are supplied by the BLM. On a individual basis, this dependency ranges from 0 to 100 percent.

Income

Total regional income was roughly $354 million in 1978. This is a 19 percent growth in real money terms (after adjusting for inflation) since 1974. Non-farm industries accounted for 85 percent of the 1978 income. Non-farm income grew by 73 percent since 1974. Statewide total income was up 14 percent since 1974. The dominant non-farm industries in the region are services (32 percent), government (16 percent), and manufacturer (15 percent), (Bureau of Economic Analysis 1980).

Total farm income in the region was $54 million in 1978. This is a 56 percent decline in income (in real money terms) since 1974. Statewide farm income declined 46 percent during this time. Farm income accounted for roughly 15 percent of the total regional income in 1978. This makes the farm sector the third most important industry in the region.

Total livestock income in the region was about $21 million in 1978. This is based on the assumption that the relationship between farm income and livestock income is about the same as that between farm receipts and livestock receipts. Between 1972 and 1977, livestock receipts averaged 39 percent of total farm receipts (BEA 1979).

To determine what impact the proposal and alternatives would have on rancher income, ranch budgets were developed. These budgets were prepared by the Economics, Statistics and Cooperatives Service of the U. S. Department of Agriculture in consultation with permittees in the EIS area. Budgets were prepared for four groups of cattle operators and two groups of sheep operators. The results of this budgeting effort are in Table 3-12. The full budgets have been reproduced in Appendix J. Table 3-12 shows that income generated by the permittees' ranches is about $3 million (before accounting for returns to investment on land). This represents 14 percent of the region's livestock income, 6 percent of the farm income and 1 percent of total regional personal income.

Employment

Total regional employment was 31,209 in 1978. Agriculture was the number one employer, with farm proprietors and wage and salary workers,

TABLE 3-12

Ranch Budgeting Results

Group	Number of Permittees	Returns above Cash Costs	Total Income
Cattle Permittees			
Group 1 - Spring Grazing, less than 300 head	27	$8,665	$233,955
Group 2 - Spring Grazing, 300 head or more	11	$24,279	$267,069
Group 3 - Spring, Summer and Fall Grazing, less than 10% dependency	16	$8,703	$139,248
Group 4 - Spring, Summer and Fall Grazing, greater than 10% dependency	12	$21,838	$262,056
Sub-Totals	66	-	$902,328
Sheep Permittees			
Group 1 - less than 5,000 ewes	13	$88,991	$1,156,883
Group 2 - 5,000 or more ewes	8	$115,192	$921,536
Sub-Total	21	-	$2,078,419
TOTALS	87	-	$2,980,747

Source: Economics, Statistics and Cooperatives Service;
U. S. Department of Agriculture,
Fort Collins, Colorado; 1980.

accounting for 20 percent of total employment. Services, government and manufacturing are the next largest employers (Bureau of Economic Analysis 1980). Since 1974, total employment in the region has risen 33 percent. Farm employment has risen 7 percent. This compares with Statewide increases of 20 and 5 percent respectively. That portion of farm employment attributable to the livestock industry is not identifiable.

Ranch Consolidations and Conversion

There has not been a great deal of ranch consolidation or conversion to non-ranching uses in the EIS area. The majority that has occurred has been near the major towns and usually involves only part of a farm or ranch being subdivided for other uses.

Capital Position

As early as 1925, it was recognized that the annual value of the federal grazing privilege was being capitalized into rancher property. "It is argued that long use of the range in connection with the early settlement of agricultural lands has resulted in capitalizing the values of public pasturage as part of the value of the ranch ..." (USDA 1925).

A report published by the Utah State University Experiment Station stated, "there was nothing illegal or unethical in the fact that grazing permits took on a value; ranchers just reacted to an economic situation that was created by government policy. Permit values rose because ranchers who had grazing permits were capturing economic rents in the form of low cost grazing; i.e., the grazing fee and recognized non-fee costs did not equal the value of the grazing to ranchers. Thus, the authorization to use the federal lands and the associated economic rents were capitalized into rancher-owned assets. This value could show up either as a permit value or as an increased value of the commensurate property" (Nielson 1971).

Although the BLM does not recognize this capitalized value of grazing permits, it is known that permits have sold at prices ranging from $25 to $55 per AUM in southern Idaho (Federal Land Bank 1979, Production Credit Association 1979, Farm Home Administration 1979, personal communication).

I. SOCIAL

A ranching lifestyle has been described as family-oriented, and one that provides a good quality of life. Economist Schultz (1970) found that most western livestock operators considered ranching first as a way of life, second as a profit-making enterprise. Ranchers felt that rural living was superior to urban living. The ranchers in the Schultz study said that ranching is virtually the only remaining industry free of government intervention.

Public participation and planning studies indicate that ranchers in the EIS area uphold Schultz's findings. They are concerned about their ability to continue their way of life in the face of economic pressures, low beef prices, complex technology and government regulations.

Livestock operators view existing grazing allocations favorably but are uneasy with proposals that could affect their economic situations. Present grazing allocations are seen in a different light by those whose primary interests are aesthetics and recreation. Such conflicts are likely on areas more popular for recreation.

Persons who are not dependent on ranching will not feel the same towards changes in grazing management on public lands.

J. AQUATIC WILDLIFE

The aquatic resources in the area occur along scattered islands and isolated river bank areas on the Snake River and along the Big Lost River south of Arco and around American Falls Reservoir.

The Snake River is the most important aquatic resource in the area. The Big Lost River is very limited by an unstable water supply. The lands around American Falls Reservoir are private or are managed by the Water and Power Resources Service. The area's fisheries and wetlands resources are generally following a declining trend. The following are the major factors affecting the aquatic/wetland habitat.

1. A reduced and irregular flow from upstream reservoirs decreases the water in game fish spawning areas.
2. Human population is increasing.
3. Intensive agriculture and irrigation have increased pollution in the Snake River.
4. Fishing throughout the area is increasing at a high rate.
5. Channels are unstable.
6. Undesirable fish species are out-competing game fish species.

The major factor affecting the condition of aquatic wildlife along the Snake River is the river's irregular flow. The beneficial impacts to vegetation and soils in the EIS area would have little affect on the water quality of the Snake River. Beneficial impacts to the riparian land along the Snake River would keep these lands in good wildlife habitat condition. Thus, grazing management as presented in the proposed action and alternatives would have no significant impact on the condition and trend of the aquatic resources along the Snake River and will not be discussed further in this EIS.

K. WILDERNESS

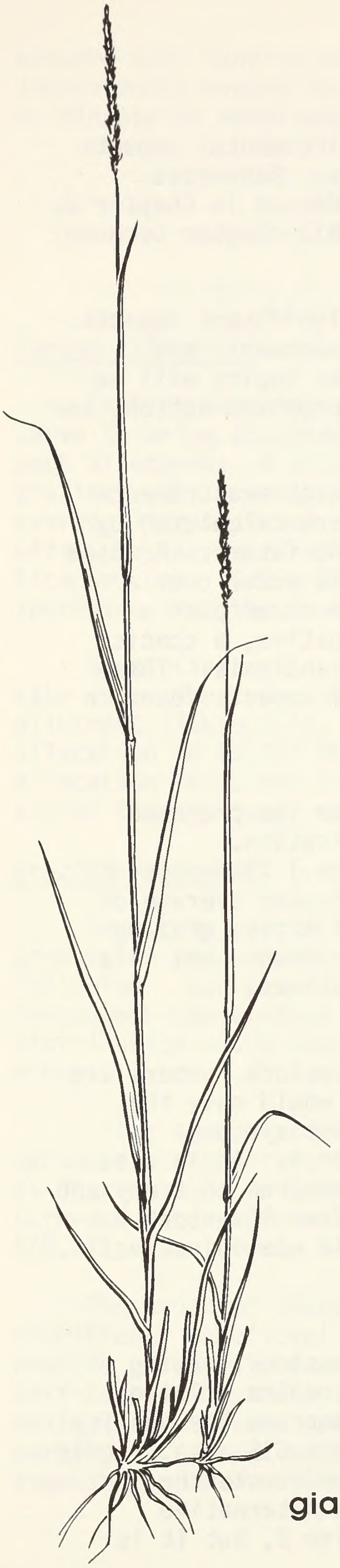
The wilderness review has been completed for the Great Rift Instant Study Area (see Glossary). Of the 374,000 acres identified for study, 341,000 acres have been recommended for inclusion in the National Wilderness Preservation System. The Big Desert planning unit contains 142,460 acres of the Great Rift Wilderness proposal.

The wilderness inventory has been completed in the unit. Two areas, Cedar Butte (35,000 acres) and Hell's Half-Acre (66,000 acres), were identified for further study. They will be studied for their suitability as wilderness within the BLM's planning system. The study will be completed in 1982.

Grazing would not affect wilderness values. No range improvements are planned for the wilderness study areas by the proposed action or the alternatives. Wilderness will not be mentioned further in this EIS.

Chapter 4

Environmental Consequences



giant wildrye

INTRODUCTION

This chapter describes the kind and degree of environmental impacts expected from the proposed action and four alternatives. Resources (vegetation, soils, etc.) are discussed in the same order as in Chapter 3. Wilderness and aquatic wildlife are not discussed in this chapter because no significant impacts are expected.

Portions of the proposed action would result in significant impacts: (1) allocation of vegetation, (2) livestock grazing management, and (3) range improvements and land treatments. These three topics will be covered where appropriate for each resource under the proposed action, and under each alternative.

Environmental assessment requires a standard by which measurements and projections can be compared. Anticipated impacts are calculated by comparing the present situation with projections for the future. As used in this chapter, long-term impacts are those expected to occur over a 20-year period. Short-term impacts are not expected to occur past a 5-year period. For the proposed action and each alternative, a concise summary of impacts appears at the end of each resource analysis. These summaries form the basis of the comparative analysis of impacts found in Chapter 2.

Forage Allocation

The AUMs that would be allocated to livestock under the proposed action and alternatives are compared to the present situation. (Alternative 1, No Action, is also the present situation.) The present situation concerning livestock grazing, refers to the 5-year average of actual use from 1975-1979, not to the existing level of active grazing preference. Therefore, 43,641 AUMs (1975-1979 5-year average use) is a point of comparison for the proposed action and alternatives.

Livestock Grazing Management

Grazing management systems, season of use, and livestock numbers are discussed in this section. It is assumed that the BLM would have the funding to develop and implement the livestock management systems described in the Proposed Action or in Alternatives 3 or 4. It is also assumed the BLM would have the funding and personnel required to carry out Alternative 1, to monitor the public land for impacts from livestock grazing, and to make adjustments in areas where multiple use objectives are not being reached.

Range Improvements

Range improvements include projects to improve livestock grazing management such as fences, spring developments and reservoirs. Range improvements also include land treatments designed to improve the quality and/or quantity of livestock forage on public land in the EIS area. It is assumed that the BLM would have the funding needed to undertake the various range improvements in the Proposed Action or in Alternative 3 or 4. New developments are not proposed in Alternative 2, but it is assumed that funding would be available for maintenance of existing range improvements needed for uses other than livestock grazing, and to remove or dispose of developments that are no longer suitable.

PROPOSED ACTION

A. VEGETATION

Forage Allocation

Initial stocking rates under the Proposed Action (Table 2-7) would serve to bring stocking in line with the inventoried carrying capacity of each allotment. A total of 59,917 AUMs have been allocated for livestock grazing. This represents a 27 percent increase over the 5-year (1975-79) average licensed use. Reduced allocations on 167,405 acres would be offset by increased allocations on 417,912 acres from the 5-year average licensed use. Table 2-7 gives an allotment breakdown of reductions or increases from the 5-year average licensed use and preference.

Vegetation would benefit from this adjustment because the stocking rate under the Proposed Action would not exceed production on any allotment (Table 2-7). Long-term increases in the livestock vegetation allocation to 65,217 AUMs by the year 2000 should not present a problem. Allocation increases would be satisfied by additional forage projected to accrue through range developments and the operation of grazing systems.

Grazing Management

Impact to vegetation from grazing is measured by changes in trend, production and condition. The primary impacts to vegetation include the following: early spring grazing would reduce vigor; repeated grazing throughout the grazing season would defoliate plants; and poor stock distribution would over use vegetation in some areas, under use it in others.

The season of grazing is important because forage plants depend on carbohydrate reserves to start growth in the spring (see Phenology section in Chapter 3.) In order to meet the phenological requirements, spring turn-out dates were set back from 15-16 days on 14 allotments totaling 528,341 acres (Table 2-7).

The proposed changes in spring turn-out dates would have a significant beneficial impact on vegetation. Delayed turn-out would provide plants a chance to develop enough photosynthetic tissue to be self-sustaining and not be dependent on root reserves. Plants could also build up the tissue needed to produce seed. When plants are grazed after carbohydrate reserves have been replenished, the vigor or health of the vegetation improves, in turn improving range condition (Parker 1954).

Grazing systems also affect the physiology of forage plants, providing significant factors for impact analysis. Systems were selected to satisfy vegetation requirements for improvement, while considering factors such as project development and the needs of each ranch operator. Grazing systems would consist of rest rotation, deferred grazing and seasonal grazing. Table 2-6 summarizes acres and the number of allotments in each grazing system. The proposed grazing systems by allotment are shown in Table 2-7.

The proposed action would have favorable effects on vegetation by greatly reducing the acreage grazed on a seasonal use basis. Seasonal grazing use is restricted to the same season each year, usually beginning with early spring grazing. Early and continued grazing reduces plant vigor, which in turn reduces the plant's ability to reproduce and to produce ground cover and litter. The 524,240 acres now assigned for seasonal use would be reduced to 281,294 acres (Table 4-1).

TABLE 4-1
Grazing Systems

	Rest Rotation		Deferred Use		Seasonal Use	
	Acres	%	Acres	%	Acres	%
Present	0	0	56,631	10	524,240	90
Future	70,032	12	229,425	40	281,294	48

Seasonal grazing systems have been designed to minimize grazing damage to plants. Utilization would not exceed 50 percent of the forage during the grazing year. Heady (1952) reports that "an average utilization of the key species over a number of years which approximates 50 percent is a reasonable expression of proper use for most grassland ranges." The change to later turn-out dates for livestock and lower stocking rates would maintain the range in at least the present condition. Allotments selected for seasonal grazing are generally in fair to good condition except for 3 allotments which total 1,016 acres. These allotments are small and unmanageable under other types of grazing systems.

Deferred grazing systems are designed to prevent livestock from grazing the same pasture during the early growing season in two succeeding years. Ideally, on a three-pasture deferred system, a particular pasture would be grazed in the spring in year one, the summer in year two and the fall in year three. Of 15 allotments proposed for deferred grazing systems, 6 would have a grazing treatment after seed ripe. Livestock on the other 9 allotments are now removed before seed ripe, so pastures on these allotments would be grazed throughout the spring and early summer.

Spring grazing use on succeeding years would be made on the pasture that received later use the year before. Grazing treatments would vary depending on number of pastures or variability in the size of pastures in the allotment. Utilization would not exceed 50 percent of the available forage in the pasture grazed. By deferring spring use yearly, plants would have a chance to replenish carbohydrate reserves. This deferment and reduced stocking rates should improve range condition.

Quaking Aspen allotment (70,032 acres) would have a rest rotation grazing system. It is the only allotment used from spring through winter. Delayed turn-out and rest rotation grazing would allow forage plants a chance to gain vigor, produce seed, plant seed and provide rest for seedling establishment. This would improve range condition over time.

A more intensively managed vegetation resource resulting from the proposed action would lead to substantial improvements in range condition and trend. Table 4-2 summarizes changes in ecological condition to the year 2000 see Appendix E-2 for condition by allotment. Overall cover would also be expected to increase slightly (Table 4-3).

TABLE 4-2

Condition Class Summary in 20 years, Proposed Action

	Good	Fair	Poor	Treated	Disturbed
Present	104,129	279,460	36,113	46,732	114,397
Future	211,543	287,092	13,177	57,166	11,853

Range Developments

The Proposed Action includes provisions for various structural developments and land treatments. Table 2-8 lists the projects by allotment. From a vegetation standpoint, the most important of these are three types of vegetation manipulation: plow and seed, burn, and spray. These treatments would alter vegetation types by maximizing grass and forb production, and by decreasing the brush on 75,700 acres.

Land treatments are scheduled for ecological sites in poor and fair condition with the exception of the Smith allotment. It is in a low good condition with shrubs invading portions of the allotment. On areas with a grass and forb understory, brush would be treated to release the understory. A total of 18,000 acres would be plowed and seeded. There are 4,800 acres along the sheep drive trail to plow and seed for halogeton control. The remaining acres to be seeded are in poor condition and can

TABLE 4-3

Comparison of Percent Total Cover by Allotment
20-Year Projection

	Existing	Proposed Action	No Action	Increased Livestock	No Livestock	Reduce W/Minimum Improvements
AEC Riverfield	57	58	55	55	57	58
Big Desert	59	62	61	62	61	62
Big Butte	62	63	62	61	64	64
Bowers	70	70	65	65	70	70
Cedar Butte	56	60	60	60	60	60
Cinder Cone	65	68	68	68	68	68
Cox's Well	58	60	59	59	60	60
East Butte	52	54	52	50	53	54
Hells Half-Acre	51	50	51	50	51	51
Houghland	60	61	62	61	61	62
Huddles Hole	68	68	68	68	68	68
Judge	50	50	50	50	50	50
Klempel	58	58	58	58	58	58
Moonshine	56	59	59	61	58	59
Mooreland	55	58	58	58	57	58
Muirbrook	50	50	50	50	50	50
No. 2 Well	54	60	54	55	57	58
Quaking Aspen	58	61	58	59	61	61
Riverfield	56	59	56	56	58	59
Rock Corral	71	72	72	72	72	72
Rudeen	70	70	67	67	70	70
Smith	65	66	65	66	66	66
Springfield	56	60	56	58	58	60
Sunset	65	67	64	66	66	67
Webb	60	55	60	55	62	62
Total Cover for Planning Unit	59%	61%	60%	61%	61%	62%

be characterized by dense stands of sagebrush with virtually no understory.

Generally, vegetation treatments would have a high, short-term, negative impact. However, in the long term, the negative impact would decline as treated areas move toward the natural potential plant community and seedings become established (Table 4-4).

In an indirect way, structural developments would also contribute to the rise in productivity because these developments are needed to implement the grazing systems discussed. Structural developments listed in Table 2-8 would have adverse impacts on vegetation. Most of these impacts would be short term and all would be minor when compared to the gains achieved by improved livestock distribution. Table 4-4 compares the short- and long-term impacts of each development.

AUMs are projected to increase over a 20-year period from 59,919 AUMs to 91,865 AUMs from land treatments and grazing management. This represents a 53% increase over current production. Table 4-5 lists carrying capacity increase by allotment.

Riparian Vegetation

Forage Allocation

Vegetation has been allocated to the seventeen Section 15 allotments along the Snake River based on allotment evaluations and consultation with permittees during 1979. Table 2-2 lists livestock numbers and season of use for each allotment. Licenses have expanded seasons, but stipulations are attached which restrict the number of days stock may be on allotments. Grazing levels would be monitored closely in the future to determine if more adjustments are needed.

Allotment evaluations have concluded that past grazing practices have not created any significant conflicts with other resource uses and values. Proposed management is designed to maintain or improve existing conditions.

Grazing Management

Phenology studies have shown that during most years, forage species have developed sufficiently to support grazing by about April 1 along the river. In order to meet phenological requirements, spring turn-out would not be any earlier than April 15. Because of the size of these allotments (Appendix A), no special grazing systems have been proposed.

TABLE 4-4

Comparison of Long- and Short-Term Impacts
Proposed Action

Range Improvements	Units	Total	Acres disturbed per unit		Total Acres disturbed	
			Short-Term	Long-Term	Short-Term	Long-Term
Wells	No.	9	1	1	9	9
Pipelines	Miles	38	1.2	0	45.6	0
Troughs	No.	34	.1	.1	3.4	3.4
Reservoirs	No.	3	.5	.5	1.5	1.5
Storage Tanks	No.	25	1.0	1.0	25	25
Fences	Miles	82.5	2	0	165	0
Cattleguards	No.	12	.01	.01	.12	.12
Roads	Miles	8	2.5	2.5	20	20
Plow and Seed	Acres	18,000	1.0	0	18,000	0
Burn	Acres	55,000	1.0	0	55,000	0
Spray	Acres	7,500	1.0	0	7,500	0
					80,807	96.4

TABLE 4-5

Twenty-Year AUM Projections

Proposed Action

Allotment	Inventoried* Carrying Capacity	Projected AUM Changes	Percent Change From Carrying Capacity
AEC Riverfield	607	+152	+25
Big Desert	33,222	+21,240	+64
Big Butte	3,414	+964	+28
Bowers	20	+4	+20
Cedar Butte	901	+88	+10
Cinder Cone	1,020	+376	+37
Cox's Well	1,588	+458	+29
East Butte	123	+12	+10
Hells Half-Acre	4	+28	+700
Houghland	2,499	+342	+14
Huddles Hole	45	+35	+78
Judge	8	+14	+175
Klempel	13	+3	+23
Moonshine	573	+56	+10
Mooreland	262	+434	+166
Muirbrook	2	+5	+250
No. 2 Well	1,301	+986	+76
Quaking Aspen	5,637	+1,903	+34
Riverfield	203	+413	+203
Rock Corral	1,200	+1,274	+106
Rudeen	826	+292	+35
Smith	2,386	+550	+23
Springfield	2,729	+1,642	+60
Sunset	1,322	+417	+32
Webb	14	+78	+557
TOTALS	59,919	31,766	+53 %

* This figure also represents initial stocking rate except for Muirbrook allotment.

Summary

The proposed action would benefit vegetation in the EIS area in the following ways.

1. Adjusted stocking rates and revised spring turn-out dates would better satisfy the physiological needs of the forage plants.
2. Implemented grazing systems would achieve more even distribution of livestock use and meet physiological requirements of the forage plants.
3. Land treatments would maximize grass and forb production on 80,500 acres.

Range Condition

	Good	Fair	Poor	Treated	Disturbed	Total
Present	104,129	279,460	36,113	46,733	114,396	580,831
Future	211,543	287,092	13,177	57,166	11,853	580,831

Cover

Present	Future
59%	61%

Production

Present	Future
59,917 AUMs	91,683 AUMs

B. SOILS

The Proposed Action would generally decrease erosion and soil compaction, and increase soil productivity.

Improving vegetation cover from 59 to 61 percent (Table 4-3) and delaying turn-out from 15-16 days on 14 allotments would reduce runoff and accelerate erosion. Erosion rates would decrease on 12 allotments totaling 219,279 acres or 38 percent of the EIS area. Nine allotments totaling 331,205 acres (57 percent) would show no change and remain in a static or upward trend. Four allotments totaling 30,387 acres (5 percent) would continue to show a downward trend in erosion.

Construction of range improvements would have a short-term, negative impact on the study area. Increased erosion would stabilize within 3 years to that of the surrounding area.

The long-term benefit of these projects would outweigh any negative impacts caused by construction. Grazing distribution would be improved from additional water development, resulting in an increase in cover.

Land treatment projects would have a short-term, negative impact on erosion through decreased vegetation cover and increased susceptibility to wind and water erosion. Erosion would be expected to increase 200 percent until a ground cover is developed. Within two growing seasons, the erosion rate should be close to normal conditions.

The long-term, beneficial impact of increased ground cover resulting in reduced runoff would outweigh the negative impacts caused by the treatments.

The overall watershed condition would improve from the increase in vegetation cover resulting from better grazing management. The increased vegetation cover would reduce soil erosion.

Land treatment projects would have a short-term, negative impact on watershed condition through decreased vegetation cover and increased runoff. A long-term beneficial impact would result as ground cover increases, causing reduced runoff and offsetting any short-term, negative impacts.

Proposed land treatments would be accomplished by plowing and seeding, burning, chaining, or spraying. Of these methods, burning and plowing would have the greatest short-term, negative impact on watershed condition. This is because little litter would remain for soil protection. Spraying would have the least impact on watershed condition because of the protective cover of litter and remaining standing dead vegetation.

C. WATER RESOURCES

The overall watershed condition would be expected to improve on 68 percent of the allotments because of an increase in total cover. The remaining allotments would be expected not to change from the existing situation. Within the Big Desert allotment, which should be improving in watershed condition because of increased cover and delayed turn-out dates, about 3,800 acres are expected to remain in poor watershed condition. This acreage is in the Flat Top watershed.

Summary

Watershed conditions would be improved by reduced erosion rates, an increase in ground cover due to improved range condition, and an increase in ground cover from land treatment projects.

D. WILDLIFE

Antelope

Forage Allocation

Forage allocated to wildlife is sufficient to support present and projected numbers of antelope. No significant impacts have been identified.

Management Systems

The overall impacts of management system on wildlife would be minor. The rest rotation system proposed for Quaking Aspen allotment would concentrate cattle in one pasture. There are about 25,500 acres of identified antelope fawning area within the allotment or about 17.8 percent of the total fawning area. Antelope fawns could be separated from the does when cattle were moved between pastures in May and June. Roughly 100 antelope use this allotment during the spring. If cattle were not moved between pastures during fawning (May 15 to June 15), little conflict would be expected between cattle and antelope.

Range Improvements

Throughout the EIS area, the major limiting factor on the antelope population is water availability and distribution. The development of more water sources would expand suitable antelope habitat and eventually increase herd size.

New fences would have a short-term, negative impact because of the invisibility of the new wire. Some antelope mortality and injury could be expected. Once antelope become accustomed to the new fence, the impact would be reduced.

Proposed land treatments have the potential for the largest impacts on antelope. Of the 80,500 acres proposed for treatment, 11,460 acres are in identified antelope fawning areas, and 14,040 acres are in antelope winter range. This represents 8 percent of the fawning area and 12.7 percent of the winter range. The remaining vegetation manipulation projects, covering 55,000 acres, make up 20 percent of the general antelope range.

Wildfires that have historically burned in antelope ranges have created the diversified vegetation on which antelope thrive (Autenrieth 1978). Condition classes fair-1 and poor-1 would benefit most from burning. Less sagebrush in these classes would improve the area, yet not seriously harm native grasses and forbs (Autenrieth 1978). Plant growth could be immediately stimulated, increasing forage yield. Forb production could be increased, and growth would begin sooner in the spring. The mosaic of vegetation created by the fire would increase the amount of edge available for use by antelope. Antelope have been known to move into burned areas to make use of these faster growing, and more palatable and nutritious plants (Klebenow and Beall 1977).

There are some negative aspects of burning. Bitterbrush will not resprout if the soil is not wet or it does not rain shortly after the fire (Wright 1972). Rabbitbrush, although not a major part of antelope diet, appears to be enhanced by fire. Production of rabbitbrush can double 3 years after a fire, and triple in 12 years (Wright 1972).

Antelope winter ranges would benefit from treatment on 8,280 acres or 7 percent (see Table 4-6). The proposed burns would increase condition by one class. The burns would reduce dense canopy cover and create a mosaic vegetation pattern. The seeding in the stock driveway would benefit antelope by reducing halogeton, although the area would remain in poor-2 condition. The proposed burn on 1,000 acres or 1 percent of the winter range would reduce the wildlife condition class from a fair-2 to poor-2. It would reduce canopy cover below optimum, 15-30 percent (see Antelope Guidelines, Appendix H). The remaining 4,760 acres of vegetation manipulation would remain in poor-2 condition class, but projects would further reduce this canopy cover. This makes up 4 percent of the antelope winter range.

TABLE 4-6
Proposed Treatments in Antelope Winter Areas

Allotment	Present Wildlife Condition Class*	Treatment	Acres of Treatment	Future Wildlife Condition Class
Big Desert	Fair-2	Burn	1,000	Poor-2
	Poor-1	Burn	4,660	Fair-1
	Poor-2	Burn	2,660	Poor-2
	Poor-2	Seed	2,560	Poor-2
Rudeen	Fair-1	Burn	960	Good
Springfield	Poor-2	Burn	640	Poor-2
	Poor-2	Plow/Seed	1,560	Poor-2
			14,040	

* See Table 3-8 for complete criteria.

Fair-1	30-50% canopy cover
Fair-2	10-15% canopy cover
Poor-1	>50% canopy cover
Poor-2	10% canopy cover

Antelope fawning areas (142,500 acres) would show a reduction in wildlife condition from good to fair-2 on 3,140 acres or 2 percent of the fawning area. This impact is created by spraying, and plow and seed (Table 4-7). Burning is proposed on 8,320 acres or 6 percent of the fawning area. These areas are now in poor-2 condition and would remain the same. In all cases, sagebrush cover would be reduced.

TABLE 4-7
Proposed Treatments in Antelope Fawning Areas

Allotments	Present Wildlife Condition Class*	Proposed Treatment	Acres of Treatment	Future Wildlife Condition Class
Big Desert	Poor-2	Burn	5,760	Poor-2
Quaking Aspen	Good	Plow/Seed	640	Fair-2
Springfield	Poor-2	Burn	2,560	Poor-2
Sunset	Good	Spray	2,500	Fair-2
			11,460	

* See Table 3-8 for complete criteria.

Good	15-30% canopy cover
Poor-2	10% canopy cover

In the general antelope range (292,121 acres), prescribed burning is proposed on 36,740 acres or 12.5 percent of the area. The burning is proposed for September and October, which would benefit the plants antelope use. Forbs could increase from the reduced competition and because a late fall burn would not affect growing plants. A fall burn would also benefit cool season grasses (Bailey 1977). See Table 4-8 for proposed land treatment by condition class.

A plow and seed treatment is proposed for 8,020 acres or 2.7 percent of the general antelope area. The treatment would have a negative impact because it would kill preferred forbs and native grasses. The sagebrush kill from these projects, about 80 to 90 percent, would change the 5,500 acres of fair-1 range to poor-2 for antelope. The 2,390 acres of poor-2 would remain poor-2. Reseeding with a mixture of grasses, forbs and shrubs is preferred because exotic monocultures are of limited value to antelope (Authenrieth 1978). Competitive, near monoculture seedings may prevent or delay the recovery of the wildlife habitat (Marlette and Anderson 1978).

The 5,240 acres of poor-2 general antelope range proposed for seeding would remain poor-2. This is 1.8 percent of the general antelope range. The impacts would be minor because of the already low condition classes. (See above impacts of seeding with crested wheatgrass after plowing.)

TABLE 4-8

Proposed Land Treatment by Condition Class in Acres

Treatment	Exc.	Good	Fair-1	Fair-2	Poor-1	Poor-2	UNC[a]	Total	Percent[b]
Burn	-	3,600	14,820	2,840	10,110	5,370	-	36,740	6.2
Plow and Seed	-	-	5,500	-	-	2,390	130	8,020	1.3
Seeding	-	-	-	-	-	5,240	-	5,240	0.8
Spray	-	-	-	5,000	-	-	-	5,000	0.8
Total	0	3,600	20,320	7,840	10,110	13,000	130	55,000	9.2
Total[c]	3,950	76,853	122,619	77,703	42,309	145,546	3,330	472,310	
Total[d]	3,950	121,093	158,643	100,487	46,704	159,589	4,268	594,734	

[a] - UNC - Unclassified

[b] - Percent of classified area within grazing allotments

[c] - Total acres by class within allotments with land treatments.

[d] - Total acres by class within grazing allotments in the EIS area.

The 5,000 acres of spraying proposed in the general antelope area would reduce fair-2 habitat to poor-2 by reducing the sagebrush canopy and killing forbs that antelope use. This acreage makes up 1.7 percent of the general antelope range.

Vegetation manipulation would benefit 36,740 acres or 12.5 percent of the general antelope range, be detrimental to 10,500 acres or 3.6 percent, and would not change 7,760 acres of poor-2 condition range.

Summary

The overall impact of the proposed action on antelope would be beneficial. With the increased water and expanded habitat antelope numbers are expected to increase.

Mule Deer

The major impact to the mule deer in the EIS area would be the development of additional water sources. This development would allow habitat expansion and eventually an increased herd size.

Sage Grouse

Range Improvements

Sage grouse select areas near water for rearing broods and spending the summer. Water for wildlife would be provided at all livestock watering facilities (see Chapter 2) during this time. This would improve existing habitat, increase brood survival, and in turn increase population.

Land treatment could impact 17 sage grouse strutting grounds and 34,240 acres of nesting habitat, or 21 percent of the strutting grounds and nesting habitat. Prescribed burning is proposed for 22,000 acres of sage grouse nesting areas and could affect 9 strutting grounds. Fire can create a diversity of usable sage grouse habitats. A mosaic of habitat is the most beneficial. Sage grouse habitat burned in small patches (Klebenow and Beall 1977) and on a rotation basis would be the most beneficial to sage grouse. Because of past suppression efforts, fuels have built up. Prescribed burning would attempt to replace the natural fires of the past and create pre-climax stages of vegetation.

Burning the strutting grounds could open them up, making the displaying males more visible to females. Fires could also create new grounds, especially if a burned area is near a water source. Fire in nesting areas could reduce the canopy cover too much and prevent nesting, but the mosaic of food and cover could actually enhance the area for brood rearing (Klebenow and Beall 1977).

Plowing and seeding would impact one strutting ground and 2,100 acres of nesting habitat in the Big Butte allotment, and 1,280 acres of nesting habitat in the Quaking Aspen allotment. The Big Butte strutting ground, the only identified ground in the allotment, could be made unusable. Seeding with crested wheatgrass could have a prolonged impact on the area. Sage grouse do not eat crested wheatgrass and rarely use a seeded area as a strutting ground (Reynolds 1980). The nesting area in the Quaking Aspen allotment is in good and fair-1 habitat condition class for sage grouse. Treatment in this area could reduce it by one or two condition classes. This could reduce the number of grouse nesting in the area.

Seedings could impact 2 strutting grounds and 2,240 acres of nesting habitat. Seeding the strutting grounds could have a detrimental impact on grouse for reasons mentioned under plow and seed. The nesting habitat is in poor-2 condition class in the Springfield allotment. An increase in cover could increase sage grouse nesting if the existing canopy cover is undisturbed.

Spraying could affect 3 strutting grounds and 2,500 acres of nesting habitat in the Sunset allotment, and 2 grounds and 4,040 acres could be affected in the Smith allotment. Several studies have found that strutting males on or near sprayed areas decreased from 49 to 100 percent within 4 years of spraying. One study found that the birds will continue to use a sprayed strutting ground if surrounding nesting and brood rearing habitat is not made uninhabitable (Call 1979). In the EIS area, the 5 grounds could be abandoned if the grounds and surrounding areas were sprayed. This spraying would reduce identified grounds and nesting areas by 6.2 percent.

Summary

In the EIS area, burning should have a beneficial impact on 22,000 acres of nesting habitat and 9 strutting grounds (13.5 percent of area identified). Plow and seed, seedings and spray projects would have an adverse impact on 12,160 acres of nesting habitat and 8 strutting grounds (7.4 percent of area identified). Exactly how much these areas would be affected is unknown, but 6 strutting grounds and 9,920 acres (6 percent) could be made unusable by sage grouse. It is also unknown if birds that have used these areas would move into adjacent habitats or grounds or if they would survive if adjacent habitats were occupied by other grouse. The overall effect of the Proposed Action should be to improve sage grouse habitat through water development and burning.

Non-Game Birds and Mammals

Management Systems

Several authors have found that grazing affects the species diversity and density of breeding birds (Weins and Dyer 1975, Buttery and Shields 1975, and USDA 1980). The most detrimental grazing period is grazing in the summer, spring, fall and winter in descending order of impact. In rest rotation systems, the benefits of rested pastures are offset by heavy use in other pastures (Buttery and Shields 1975).

Weins and Dyer (1975) conclude that grazing is not incompatible with proper habitat management for non-game birds, at least if conducted at moderate intensity. Ryder (1980) concluded that spring grazing by sheep was compatible with bird populations in sagebrush dominated habitats. He also found that grazing can affect the food of birds, namely small mammals and insects.

The degree and intensity of impact to non-game birds from the proposed action is unquantifiable. Seasonal grazing, especially in the spring (breeding season), and deferred systems without a rested pasture could be detrimental to birds (Buttery and Shields 1975).

Small mammal diversity in sheep grazed sagebrush was significantly reduced on the Idaho National Engineering Laboratory (INEL) (Reynolds 1978). On existing crested wheatgrass seedings that are grazed, only a fraction of the animals found in native sagebrush areas were present. Black-tailed jackrabbits were the only species to maintain population levels in grazed and reseeded areas at a density similar to that found under control conditions.

Range Improvements

Development of water sources in the EIS area could both benefit and harm non-game birds and small mammals. Benefits would include more available water, more insects around the water, more dusting areas and new, suitable habitat. In trough overflow areas, new marsh habitat could be created. The detrimental effects of water development could be the attraction of predators, the loss of habitat from development, overuse and deterioration of areas near water sources. Overall, the impacts would be beneficial but at an unquantifiable amount.

Fences could provide additional perch sites for birds and have little impact on small mammals.

Burning could be both beneficial and detrimental to birds. Fire can create an edge effect and increase diversity of birds. Klebenow and Beall (1977) found that bird species changed from canopy feeders to ground, aerial and nectar feeders following burning. During late summer, burns were widely used by seed eaters. The seeds of forbs were much more available in the burned areas than in the unburned. The adverse impact would be a reduction of sagebrush obligate species in project areas.

The burning would create more edge effect for small mammals, but they would also be more susceptible to predation in the reduced canopy cover. During the burning, some small mammals could become confused by the smoke and flames and be destroyed by the fire. Prescribed burning would have an overall beneficial impact to most species.

Plowing sagebrush would reduce sagebrush obligate species, and reseeding would decrease diversity and density of non-game birds. Conversion of sagebrush could be detrimental to some species but could improve the area for horned larks, western meadow larks, vesper sparrows, lark sparrows and mourning doves (Braun 1976). On the INEL, Reynolds

(1978) found a reduction of vegetation diversity and a reduction in the number and diversity of breeding birds on former sagebrush lands planted with crested wheatgrass. Seeding with a crested wheatgrass mixture could produce a near monoculture (as discussed under antelope in this section) and have a negative effect on native wildlife population. Western harvest mouse and horned lark were the only species that maintained the same population levels as in untreated sagebrush (Reynolds and Trost 1979).

Large scale treatment projects, such as spraying, are detrimental to most bird populations. Studies of sprayed areas in Montana and Wyoming found a 54 and 62 percent decrease in the population of Brewer's sparrow (Braun 1976). This decrease was in response to a total kill of sagebrush. Obligate species do not use areas of total sagebrush kill. Plow and seed and spraying would have negative impacts on most species in the area of the treatments.

Sensitive Species

Ferruginous Hawks

Grazing of livestock could change vegetation composition, density and diversity, in turn changing the numbers and kinds of prey species availableto ferruginous hawks. Moderate to heavy grazing pressure on sagebrush in the winter could kill many of the plants, open up the area, and make prey species more vulnerable to hunting hawks (Call 1979; Olendorff, Motroni, and Call 1980).

Vegetation treatments would impact hawks by affecting prey populations when sagebrush was converted to grass (Call 1979). This could have an unquantifiable adverse impact on hawks.

Long-billed curlews

Converting brushland to grass could reduce numbers of curlew prey. Nesting habitat could be enhanced through the reduction of brush. The impacts to curlews are unquantifiable.

Burrowing Owls

Rangeland conversions could have the greatest impact on burrowing owls. First, nesting habitat could be enhanced, but the disturbance of existing habitat (especially through plowing) could offset any benefits gained. Secondly, rangeland conversions could change prey numbers and species present. Gleason (1978) suggests that the availability of rodents could be an important regulator of brood size, probably through post-hatching mortality. Rodent numbers could decrease in land treatment areas. This could have an unquantifiable adverse impact on burrowing owls.

TABLE 4-9

Wildlife Summary for Proposed Action

	Management Systems		Range Improvements	
Species	Present	Proposed Action	Present	Proposed Action
Antelope	Competition in winter sheep areas.	No change	Lack of adequate water source.	Improved water sources and distribution.
			Mixture of native habitat types.	Conversion of 24,080 acres.
Mule Deer	No conflicts	No conflicts	Lack of water.	Improved water sources and distribution.
Sage grouse	Livestock use prior to peak hatching. Disturbance by sheep trailing in Big Desert allotment.	No change	Lack of water.	Improved water sources and distribution.
			81 strutting grounds	17 grounds to be treated. 100% loss of strutting males on 5 grounds to be sprayed.
Non-game animals	No conflicts	No conflicts	Good mixture of habitat types.	Conversion of 24,080 acres.
Sensitive Species	Disturbance of nesting birds.	No change.	Prey base stable.	Some changes in prey numbers and types due to vegetation treatments.

E. CULTURAL RESOURCES

Under the Proposed Action, AUMs would be reduced below the present 5-year average on 14 allotments, unchanged on 10 and eliminated on 1. These changes should have little affect, either adverse or beneficial, on 170 sites in the unit's allotments.

Prehistoric sites affected by trampling and erosion include temporary campsites and tool manufacturing sites. Some rock alignments (windbreaks and cairns) could be adversely affected. Rockshelters and rock art in the unit are not normally accessible to livestock. One historic site, fragile ruins of a stagecoach station, could be affected by increased trampling.

No cultural resource sites listed on the National Register of Historic Places would be adversely affected.

Management Systems

Grazing systems used in the unit should create few new adverse impacts. Present and future impacts could be mitigated by fencing, project or facility relocation, site excavation, collection or other measures. Trampling and soil erosion would be eliminated in one allotment (grazing eliminated). Sites would benefit from increased vegetation cover.

Range Improvements

Cultural resource sites in the unit could be damaged during construction and implementation of proposed range improvements. Unless sites are detected, documented and avoided, they could be irretrievably damaged. Large acreages proposed for vegetation manipulation pose a threat to recorded and unrecorded sites. When vegetation cover is removed, there may be a temporary increase in soil erosion, and sites may be more easily detected by amateur collectors and relic hunters. Proposed plowing and seeding threatens sites on 8 allotments. Subsurface sites could be damaged regardless of inventory intensity and thoroughness.

Other types of range improvement projects could adversely affect cultural resource sites in the unit. However, this should be avoided if current intensive inventory requirements (Class III) are met. Maintenance of proposed range improvement projects should create few, if any, adverse impacts on cultural resource sites.

Indirect impacts may result from planned road construction and improvement. Improved access may be provided to inaccessible areas for relic collectors and others who might damage or remove artifacts illegally from public land. Inaccessibility is the only protection provided most sites in the EIS area.

Prehistoric sites directly threatened by range improvement projects include temporary campsites, tool making sites and rock alignments. One historic site is directly threatened by a proposed plow and seed. No National Register sites are threatened by proposed projects. However, eligible sites (both prehistoric and historic) could be adversely affected by extensive vegetation manipulation.

Summary

Proposed AUM reductions and grazing systems should create few new adverse impacts over the present situation. Trampling and soil erosion would continue to affect 35 cultural resource sites. Extensive vegetation manipulation could inadvertently disturb documented and undocumented sites regardless of mitigating measures used. Road construction could allow easier access to some areas, contributing to unauthorized collecting from sites.

F. VISUAL RESOURCES

Proposed Action

The EIS area has been divided into scenery units, based on similarities in topography and land cover types. Each scenery unit was then given a visual resource management (VRM) class rating (I through V) and assigned a visual absorption capability (VAC) rating (high, medium or low). The VRM classes are used to help form objectives for enhancement, rehabilitation and protection. The VAC defines an area's ability to absorb visual modifications.

With one exception, most range projects would occur within an area rated VRM Class IV. Because this area has a low visual absorption capability, most of the proposed projects would be quite visible. However, because the projects would lie in a seldom-seen area (VRM Class IV), the projects would be acceptable if VRM techniques are used in their implementation.

One project, a proposal to plow and seed 2,100 acres at the base of Big Southern Butte, creates a visual problem. The area has a low to medium-low absorption ability and has been rated as a Class II area. Because the area has a low absorption capability, the proposed project would be quite apparent from U.S. Highway 20.

Changes to any of the basic elements (form, line and color) caused by a management activity should not be evident in a Class II area. Contrast can be seen in these areas but must not attract attention. Therefore, this project would be inconsistent with visual management objectives for a Class II area.

Summary

The proposed 2,100-acre plow and seed project would be inconsistent with VRM objectives for Class II areas, and would degrade the existing visual resource. Other proposed projects in areas with a Class IV rating would have no discernible adverse impacts and are consistent with VRM objectives.

G. RECREATION

Water is apparently one of the main limiting factors in controlling deer and antelope populations in the EIS area. The wildlife water sources provided by this proposal could help increase herd sizes by as much as 100 percent in the next 15 years. With such increases, the Idaho Department of Fish and Game could increase the number of hunting permits issued, thereby increasing the number of hunter days.

If mitigating measures are followed, the proposed range improvements should not adversely affect sage grouse. There could even be an increase in bird populations. Idaho Fish and Game predicts that hunter days should increase 10 percent in the next 10 years, from 2,287 to 2,516.

At present, there is very little off-road vehicle (ORV) travel occuring within the EIS area. Therefore, the 82.5 miles of fences proposed would have little impact on ORV use. The construction of 8 miles of new road would open more areas to hunting and would increase ORV opportunities.

H. ECONOMICS

Income: Livestock-related

The Proposed Action represents an overall 8 percent reduction from active preference. This varies a great deal by class of livestock and to a lesser extent by group within each class. The overall change from 5-year average use is an increase of 37 percent. This also varies by class of livestock and group with cattle group 2 experiencing an 8 percent reduction, and sheep group 1 receiving a 123 percent increase (Table 4-10).

Linear programming was used to determine what affect these changes in AUM levels would have on rancher income (see Appendix J). The results of the linear programming analysis are shown in Table 4-11. The total annual income change would be a gain of $121,000. This is primarily due to the

TABLE 4-10

Changes By Group, Proposed Action

Group	Description	Number of Operators	Active Preference	Average Use	Proposed Use	Percent Change From Active	Percent Change From Average
Cattle 1	Spring Grazing - less than 300 head	27	5,861	4,781	4,693	-20	-2
Cattle 2	Spring Grazing - 300 head or more	11	10,814	9,989	9,214	-15	-8
Cattle 3	Spring, Summer, and Fall Grazing - less than 10 percent dependency	16	1,224	1,086	1,107	-10	+2
Cattle 4	Spring, Summer, and Fall Grazing - 10 percent or greater dependency	12	13,073	10,174	10,899	-17	+7
Total Cattle		66	30,972	26,030	25,913	-16	-1
Sheep 1	Less than 5,000 ewes	13	16,796	7,518	16,796	0	+123
Sheep 2	5,000 ewes or more	8	17,671	10,391	17,671	0	+70
Total Sheep		21	34,467	17,909	34,467	0	+92
TOTALS*		87	65,439	43,939	60,380	-8	+37

* Does not include data for the U.S. Sheep Experiment Station.

large gains by sheep operators. This gain of $121,000 would represent 4 percent of the EIS permittees' income, 1 percent of the livestock income in the three-county region, 2/10 of 1 percent of the regional farm income and 3/10 of 1 percent of the total regional income.

The implementation of range improvements would gradually increase the number of AUMs available to ranchers. By the end of the twentieth year, a total of 92,408 AUMs would be available. This would be a 41 percent increase from active preference and a 110 percent increase from average use. This gain in AUMs would translate into an income loss of $120,000 annually after 20 years. This loss occurs because of the ways cattle groups 1 and 2 use BLM AUMs (spring grazing only). In order to use AUM increases, they would have to increase their herd size and carry those extra cattle the rest of the year. The high cost of alternative feeds would cause ranchers to lose money.

Income: Regional

The BLM would spend $1.8 million to install range improvements and perform land treatments in the EIS area. Roughly $326,000 of this amount would be spent in the three-county regional economy. The range improvements would be installed over a 5-year period and the land treatments within 15 years. Maintenance of the range improvements would cost $27,000 annually. Roughly $16,000 would be spent in the local economy (Refer to Appendix J).

Implementing the proposed action would enhance recreation opportunities in the EIS area. Hunting big game species would increase by 50 percent and upland game hunter days would increase by 10 percent (from recreation section). These increases in hunter days would generate $5,300 annually in income in the EIS area by the twentieth year (see Appendix J).

Income changes due to changes in AUM levels, construction activities, and recreation create additional (or secondary) impacts to the regional economy. Initially, these secondary income changes would be a gain of $27,000 annually. By the twentieth year, the secondary changes would be a loss of $14,000 annually. These secondary income impacts have been estimated through the use of a computerized regional economics model called DYRAM (see Appendix J).

For comparison purposes, the regional income impacts of each alternative have been discounted to their net present worth. Discounting is a procedure that allows comparisons of differing income streams by accounting for the time value of money (see Appendix J). The net present worth of the regional income changes associated with the proposed action is +$1.1 million.

TABLE 4-11

Rancher Income Changes
Proposed Action

Group	Change/Operator	Total Change
Cattle 1	-$ 177	-$ 4,779
Cattle 2	-$2314	-$ 25,454
Cattle 3	-0-	-0-
Cattle 4	+$ 109	+$ 1,308
Subtotal		-$ 28,925
Sheep 1	+$8774	+$114,062
Sheep 2	+$4489	+$ 35,912
Subtotal		+$149,974
TOTAL		+$121,049

SOURCE: Linear Programming Analysis; Economics, Statistics, and Cooperative Service; USDA, Fort Collins, Co.; 1980

Employment

The proposed action would create some additional employment, primarily in the three sectors of the economy directly impacted (livestock, services, and construction). Initially, a total of 15 jobs would be gained (8 direct livestock, 3 secondary livestock, 4 direct construction). By the twentieth year, this would change to a loss of 4 jobs (-4 direct livestock, -2 secondary livestock, +2 direct construction).

Ranch Consolidation and Conversion

Ranch consolidation and conversion out of agriculture would probably continue, but implementing the proposed action would not significantly affect either.

Capital Position

Because reduction in permits or permit values are measured against the total qualified demand, the impact of the loss of capital assets in the form of federal AUMs could be larger than the direct loss of income due to reductions measured against the 5-year average use. Neilson and Workman (1971) address the point: "Grazing permits held today represent an asset which a rancher can borrow against or sell in the market. If this asset becomes non-saleable, the rancher has lost the opportunity of marketing a valuable asset...If the permit is reduced, the value of the permit is also reduced, and the rancher has lost a capital asset which previously could have been sold, or at the least, been used as collateral for securing loans."

In addition, any impacts in this area would occur when a rancher sells his ranch, his grazing permit, or uses the federal AUMs for collateral when obtaining a loan. The BLM does not officially recognize that grazing permits have attained a capitalized value and are bought and sold on the marketplace.

Summary

The Proposed Action would initially create an annual income gain of $121,000 to EIS area livestock operators. By the twentieth year, this would have changed to a loss of 120,000. Roughly $1.8 million would be spent by the BLM on range improvements, $326,000 of which would be spent locally. Annual maintenance of the range improvements would cost $27,000, of which $16,000 would be spent locally.

Secondary income gains would initially be $27,000. By the twentieth year, this would change to an additional loss of $14,000 annually. The net present worth of the income changes to the regional economy would be +$1.1 million. Initially there would be an employment gain of 15 jobs. After 20 years this would change to a loss of 4 jobs.

Ranch consolidation and conversion would not be impacted by the proposed action. Capital position would be slightly impacted until sufficient AUMs are regained to restore all operators to their current active preference.

I. SOCIAL

The Proposed Action would not measurably affect the area's social system. The proposal could reduce the sense of social well being of some persons who derive their livelihoods from ranching activities because of changes in stocking rates and a greater emphasis on multiple use. Multiple use threatens ranchers' feelings of independence and their traditional uses of public lands. Changes in management required to implement allotment management plans further threatens independence and traditional operating methods. Changes in stocking rates could cause economic losses for some, both in ranch income and the ability to borrow money. Many ranchers would, however, experience an increase from this proposal in the long run.

ALTERNATIVE 1 - NO ACTION

A. VEGETATION

Forage Allocation

The current livestock grazing program would continue. The active grazing preference would remain at 65,217 AUMs. Table 2-7 lists the current grazing preference for each allotment. On 15 allotments totaling 249,697 acres, this would be above the carrying capacity of the range as determined by the 1978-1979 vegetation production inventory.

Stocking rates would be at or below the carrying capacity on 10 allotments totaling 331,174 acres, or 57 percent of the public land in the EIS area. Overall, slight improvement could be expected in range condition and production. There would be some changes in vegetation types. Many of those acres in various stages of plant succession after fire disturbance would eventually revert back to typical range sites.

Table 4-12 indicates projected changes in condition, and Table 4-3 shows projected changes in cover (see Appendix E-3 for breakdown by allotment). As a result of condition changes, vegetation production would show a long-term increase of 11,240 AUMs (Table 4-13).

TABLE 4-12

Condition Class Summary in 20 Years
Alternative 1 - No Action

	Good	Fair	Poor	Treated	Disturbed
Present	104,129	279,460	36,113	46,732	114,397
Future	123,916	319,811	47,530	40,741	48,833

Grazing Management

Existing seasons-of-use and grazing systems would continue as presently established (Table 2-7). Twelve allotments totaling 526,617 acres (91 percent of the EIS area) would continue to receive grazing use too early to meet the physiological requirements of vegetation.

Some grazing management would be transferred to the Idaho Department of Lands as described in the Proposed Action.

Range Improvements

No additional project development or land treatment projects for livestock grazing would occur.

TABLE 4-13

Twenty-Year AUM Projection

Alternative 1 - No Action

Allotment	Inventoried* Carrying Capacity	Projected AUM Changes	Percent Change From Carrying Capacity
AEC Riverfield	607	-76	-12
Big Desert	33,222	+11,243	+34
Big Butte	3,414	-314	-9
Bowers	20	-11	-55
Cedar Butte	901	+88	+10
Cinder Cone	1,020	+376	+37
Cox's Well	1,588	+209	+13
East Butte	123	-7	-6
Hells Half-Acre	4	0	0
Houghland	2,499	+174	+7
Huddles Hole	45	+35	+78
Judge	8	0	0
Klempel	13	+3	+23
Moonshine	573	+56	+10
Mooreland	262	+434	+166
Muirbrook	2	+5	+250
No. 2 Well	1,301	-258	-20
Quaking Aspen	5,637	-900	-16
Riverfield	203	+145	+71
Rock Corral	1,200	+1,274	+106
Rudeen	826	-161	-20
Smith	2,386	-475	-20
Springfield	2,729	-446	-16
Sunset	1,322	-154	-12
Webb	14	0	0
TOTALS	59,919	+11,240	+19%

*This figure does not represent initial stocking rate for this alternative.

Riparian

Forage allocation and grazing management would be the same as the Proposed Action under this alternative.

Summary

Implementation of Alternative 1 would have varying impacts on vegetation. The impacts depend on the stocking rate in relation to the carrying capacity. About 249,697 acres would be overstocked. Range condition and vegetation production would show slight improvement. The projected changes include the following.

Range Condition

	Good	Fair	Poor	Treated	Disturbed
Present	104,129	279,460	36,113	46,732	114,397
Future	123,916	319,811	47,530	40,741	48,833

Cover

Present	Future
59%	60%

AUM Projection

Present	Future
59,917	71,157

B. SOILS

There would be no change in erosion rates on 12 allotments (171,521 acres). These allotments show a static or upward range trend. Soil productivity and fertility should remain the same or possibly improve. Twelve allotments (397,298 acres) would have increased erosion rates from overstocking and early turn-out dates. Soil productivity and fertility would decrease. Erosion rates would decrease on one allotment (12,052 acres). On this allotment, soil productivity and fertility should improve (Appendix F-2).

Continuing present grazing intensity would increase the percentage of annual vegetation cover on the allotments that are overstocked. Watershed conditions are not considered stable if plant communities are predominantly annual plants. Under this alternative, present erosion and soil compaction problems would continue.

C. WATER RESOURCES

Watershed Conditions

Watershed conditions are not expected to change much from current levels (see Appendix F-2). However, as present downward range condition trends continue, runoff and sediment yield are expected to increase. This is especially true of the Flat Top watershed where local flooding problems have been identified in Chapter 3.

Water Availability and Water Use

No change would occur.

D. WILDLIFE

Although wildlife allocations would not be made under this alternative, there is sufficient forage available for wildlife populations.

Under this alternative, the present distribution and numbers of animals are expected to remain the same. While populations would fluctuate in response to natural stimuli, no long-lasting improvement in total numbers could be expected, mainly because of the lack of additional water sources. Because water is the major limiting factor on wildlife populations in the EIS area, new areas could not be utilized nor could populations be expanded without it.

E. CULTURAL RESOURCES

No new adverse impacts are anticipated. Known types of impacts would continue to act upon cultural resource sites unless mitigated.

F. VISUAL RESOURCES

This alternative would create no new visual impacts on the area's visual resource.

TABLE 4-14

Wildlife Summary
Alternative 1 No Action

	Management Systems		Range Improvements	
Species	Present	No Action	Present	No Action
Antelope	Competition in winter sheep areas.	No change	Lack of water sources	No change
			Mixtures of habitat types.	No change
Mule Deer	No Conflicts	No change	Lack of Water	No change
Sage Grouse	Livestock use prior to peak hatching.	No change	Lack of water	No change
	Disturbance by sheep trailing in Big Desert allotment.	No change	81 strutting grounds.	No change
Non-game	No conflicts	No change	Good mixture of habitat types.	No change
Sensitive Species	Disturbance nesting birds.	No change	Prey base stable.	No change

G. RECREATION

Alternative 1 should have no impact on recreation.

H. ECONOMICS

Income: Livestock-Related

This alternative would have no impact on the regional livestock industry.

Income: Regional

This alternative would decrease the number of waterfowl and fishing recreation visitor days (see recreation section). These reductions in visitors days would cause an income loss of $37,000 annually by the twentieth year. This direct income loss would cause secondary income losses of $3,000 by year 20.

The net present worth of the regional income changes associated with this alternative would be -$212,000.

Employment

Income losses as a result of reduced recreation visitor days would cause the loss of two direct jobs by the twentieth year.

Ranch Consolidation and Conversion

No consolidation of ranches or conversion of ranch property to other uses would occur as a direct result of this alternative.

Capital Position

There would be no impact on capital position with this alternative.

I. SOCIAL

The impacts and analysis for Alternative 1 are the same as the Proposed Action.

ALTERNATIVE 2 NO LIVESTOCK GRAZING

A. VEGETATION

Forage Allocation

Impacts to vegetation under this alternative would be uniformly favorable. Plant composition within each vegetation type on public land would gradually move toward climax (natural potential). Movement toward a climax condition could be slower without the benefit of grazing. Sampson and Malsten (1926) found that more seedlings were established under grazing.

All public rangeland in the area would show a long-term improvement. Table 4-15 lists the 20-year condition projections for this alternative; Appendix E-4 gives a breakdown by allotment. Similar improvements in productivity and cover could also be expected (Table 4-3 and 4-16). An increase of 18,408 AUMs is projected as a result of condition class increases. These AUMs would be allocated to wildlife and nonconsumptive uses.

TABLE 4-15

Condition Class Summary in 20 Years
Alternative 2 No Livestock Grazing

	Good	Fair	Poor	Treated	Disturbed
Present	104,129	279,460	36,113	46,732	114,397
Future	183,919	279,283	29,902	40,198	47,529

Grazing Management

Grazing would continue on State allotments as stated in the proposed action.

Range Improvements

No range improvements would be constructed. About 111 miles of existing pasture fence would be removed. Boundary fences around the EIS area would be maintained.

Riparian Vegetation

Vegetation along the Snake River would improve in condition and trend more rapidly than the rest of the EIS area. This is due to higher productive capabilites and extended growing seasons because of increased water availability.

Summary

Vegetation throughout the EIS area would benefit under the No Livestock Grazing alternative. Projected improvement in range condition, cover and productivity can be summarized as follows.

Range Condition

	Good	Fair	Poor	Treated	Disturbed
Present	104,129	279,460	36,113	46,732	114,397
Future	183,919	279,283	29,902	40,198	47,529

Cover

Present	Future
59%	61%

AUM Projection

Present	Future
59,917	78,325

TABLE 4-16

Twenty-Year AUM Projections
Alternative 2 - No Livestock Grazing

Allotment	Inventoried Carrying Capacity	Projected AUM* Changes	Percent Change From Carrying Capacity
AEC Riverfield	607	+22	+4
Big Desert	33,222	+11,243	+34
Big Butte	3,414	+614	+18
Bowers	20	+4	+20
Cedar Butte	901	+88	+10
Cinder Cone	1,020	+376	+37
Cox's Well	1,588	+458	+29
East Butte	123	+3	+2
Hells Half-Acre	4	0	0
Houghland	2,499	+445	+18
Huddles Hole	45	+35	+78
Judge	8	0	0
Klempel	13	+3	+23
Moonshine	573	+23	+4
Mooreland	262	+423	+162
Muirbrook	2	+5	+250
No. 2 Well	1,301	+237	+18
Quaking Aspen	5,637	+1,617	+29
Riverfield	203	+179	+88
Rock Corral	1,200	+1,274	+106
Rudeen	826	+292	+35
Smith	2,386	+63	+3
Springfield	2,729	+785	+29
Sunset	1,322	+213	+16
Webb	14	+6	+43
TOTALS	59,919	+18,408	+31%

* Predicted changes in forage production is presented in AUMs although forage would not be allocated to livestock under this alternative.

B. SOILS

Removing livestock grazing from the Big Desert would benefit watershed conditions on all allotments by decreasing soil compaction and erosion. Reducing utilization and the effects of trampling would increase ground cover from 59 percent to 61 percent (Table 4-3). Increasing canopy cover has the short-term result of decreasing the effects of raindrop splash, increasing infiltration, and decreasing runoff, thus lowering the erosion rates. The long-term result besides decreasing erosion, is to increase the soil productivity by improving fertility (through organic return from litter), improving soil structure and increasing the soil's water-holding capacity.

By removing livestock grazing pressure, disturbed areas would have a chance to revegetate. Riparian areas, meadows and reservoirs would have reduced erosion rates. Reducing trampling and increasing vegetation cover on these areas would decrease the erosion rates to those of the surrounding area.

C. WATER RESOURCES

Watershed Condition

Vegetation cover would not be harvested by livestock, creating optimum conditions for plant cover and erosion protection (see Appendix F-2). Numerous studies have shown that ungrazed areas have less runoff and fewer water quality problems. Runoff problems for local communities would decrease as range conditions improved in the upper watershed.

Water Availability

Water available for use by wildlife would be reduced significantly as existing projects are salvaged and because no new developments would be constructed.

Water Uses

Water consumption by grazing animals would be reduced to less than 1 acre-foot annually.

D. WILDLIFE

Complete removal of livestock from the EIS area would result in very little change from the present situation except that competition for forage would be eliminated.

Beneficial impacts could include the following.

1. No competition for forage between livestock and wildlife.
2. No disturbance of pregnant antelope or nesting sage grouse, ferruginous hawks, and long-billed curlews.
3. No range improvements to modify existing habitat.
4. No changes in vegetation composition from livestock grazing.
5. Removal of barriers to antelope, such as fences.

The adverse impacts could include the following.

1. An overgrowth of vegetation could make wildfires more disastrous, creating more impacts to wildlife species. Overgrown vegetation could also reduce waterfowl nesting, lowering the area's productivity.
2. No vegetation manipulation would be done, giving less edge and mixing of habitat types.
3. Lack of water developments would limit population expansion.

TABLE 4-17

Wildlife Summary
Alternative 2 No Livestock Grazing

	Management Systems		Range Improvements	
Species	Present	No Grazing	Present	No Grazing
Antelope	Competition in winter sheep areas.	No competition	Lack of adequate water resources.	No change
			*	No change
Mule Deer	No conflicts	No change	Lack of water	No change
Sage Grouse	Livestock use prior to peak of hatching.	No livestock disturbance.	Lack of water	No change
	Disturbance by sheep trailing in Big Desert allotment.	No disturbance	81 strutting grounds	No change.
Non-game Animals	No conflicts	No disturbance	Good mixture of habitat types.	No change.
Sensitive Species	Disturbance of nesting birds.	No disturbance	Prey base stable.	No change beyond natural fluctuations.

* Mixture of native habitat types.

E. CULTURAL RESOURCES

Cultural resource sites now suffering adverse impacts (livestock trampling) would benefit from the removal of livestock from public land. Trampling would be eliminated and soil erosion would be reduced.

F. VISUAL RESOURCES

As in Alternative 1, no new visual impacts would be created. However, the removal of some 111 miles of fence could remove some visual intrusions.

G. RECREATION

This alternative would have an adverse impact on both hunting and fishing along the Snake River. Cattle grazing helps keep areas along the river banks open and free of tall brush. These open areas are essential to hunting and fishing because they provide river access. They also provide camping areas.

If grazing were eliminated from the EIS area, there would be no reason for the range program to maintain water sources. Water is critical in maintaining both big and upland game populations. If game populations decrease, hunter days and observation opportunities would also decrease.

Summary

This alternative could reduce hunting, fishing and camping opportunities along the river, and reduce hunting and wildlife observation opportunities in the desert.

H. ECONOMICS

Income: Livestock-Related

This alternative would impose a 100 percent AUM reductions on all permittees and lease holders in the EIS area. This would be a major adverse impact to the local livestock industry. Annual income losses would be $2.2 million (Table 4-18). This would represent 74 percent of the EIS area ranch income, 11 percent of the regional livestock income, 4 percent of the regional farm income, and 1 percent of the total regional income. This reduction of AUMs would continue throughout the life of this alternative.

TABLE 4-18

Rancher Income Changes
Alternative 2 - No Livestock Grazing

Group	Change/Operator	Total Change
Cattle 1	-$12,074	-$ 325,998
Cattle 2	-$28,840	-$ 317,240
Cattle 3	-$ 784	-$ 12,544
Cattle 4	-$39,567	-$ 474,804
Subtotal		-$1,130,586
Sheep 1	-$42,644	-$ 554,372
Sheep 2	-$66,610	-$ 532,880
Subtotal		-$1,087,252
TOTAL		-$2,217,838

SOURCE: Linear Programming Analysis; Economics, Statistics, and Cooperatives Service; U.S. Dept. of Agriculture; 1980.

Income: Regional

There would be no range improvements installed with this alternative. Recreation visitor days would not be affected.

Secondary income impacts from the direct losses in the livestock industry would amount to $486,000 annually. These losses would be spread throughout the entire regional economy. The net present worth of the regional income changes would be -$27.8 million.

Employment

The direct income losses in the livestock industry would cause the loss of 145 jobs in that industry. In addition, the secondary income losses would cause another 46 jobs to be lost. These losses would be spread through the entire regional economy. These employment losses would continue throughout the life of this alternative.

Ranch Consolidation and Conversion

There would be roughly 50 permittees that would find it difficult, if not impossible, to meet their cash operating expenses under this alternative. These permittees would be expected to sell, consolidate with other ranchers, or convert their ranches to other uses if this alternative is adopted.

Capital Position

Although not quantifiable, this alternative would greatly impact the capital position of the permittees. This would be a severe impact, especially to those ranchers who find it necessary to sell their ranches. These permittees would find the ranch able to command a much lower selling price than it could when the BLM AUMs were available for use.

Summary

This alternative would have severe impacts on the local livestock industry causing an annual income loss of $2.2 million and employment losses of 145 jobs. Secondary income and employment losses would be $486,000 and 46 jobs. The net present worth of the regional income changes would be -$27.8 million.

As many as 50 permittees might be expected to sell, consolidate, or convert their ranches to other uses as a result of this alternative.

Capital position would be impacted greater than in any other alternative.

I. SOCIAL

Alternative 2 could measurably affect the area's social systems. The removal of grazing from public lands in the EIS area could cause up to 50 ranchers to seek outside employment to subsidize ranch income, or consider ranch consolidation, or sale in order to survive. If many ranches were sold, local community groups and businesses would experience losses of membership or clientele that could threaten their existence. In some cases, sales and relocation could mean loss of the ranching lifestyle.

ALTERNATIVE 3
INCREASED LIVESTOCK USE

A. VEGETATION

Forage Allocation

The initial stocking rate for livestock under this alternative is the current active grazing preference of each operator. The active grazing preference includes authorized active use and non-use, but does not include suspended non-use. A total of 65,217 AUMs would be allocated to livestock. Fifteen allotments totaling 249,697 acres (43 percent of the EIS area) initially would be grazed beyond their carrying capacity. This represents an 8 percent increase over the current carrying capacity. This increased allocation would be met by implementing grazing systems (the same as under the Proposed Action) and by undertaking land treatments as shown in Table 2-12.

Grazing Management

Grazing systems and seasons of use would be the same as those discussed under the Proposed Action (Table 2-7). Short-term impacts would be similar, though slightly less favorable under this alternative on those allotments grazed beyond their carrying capacities. Range condition would show long-term improvement (Table 4-19). See Appendix E-5 for breakdown by allotment. Cover could increase from 59 percent to 61 percent (Table 4-3). Grazing management would be transferred to the Idaho Department of Lands on the Carter, Nipples, Katseanes, State Twin Buttes and Whitehead allotments as described in the Proposed Action.

TABLE 4-19

Condition Class Summary in 20 Years
Alternative 3 - Increased Livestock Use

	Good	Fair	Poor	Treated	Disturbed
Present	104,129	279,460	36,113	46,732	114,397
Future	154,508	321,158	21,807	69,682	13,676

Range Improvements

This alternative includes provisions for various structural developments and land treatments. The impacts of the developments were discussed under the Proposed Action. Five types of vegetation manipulation would be undertaken with this alternative: spray and seed (8,577 acres), plow and seed (28,230 acres), burn or chain (101,350 acres), and spray (14,736 acres). Table 2-12 lists vegetation manipulation by allotment. Vegetation treatments would have a high, negative, short-term impact on vegetation. However, the negative impact would decline in the long term as treated areas move toward the natural potential plant community and as seedings become established.

Vegetation treatments and grazing management would contribute to long-term increases in AUMs from 59,919 AUMs to 91,365 AUMs (Table 4-20). Productivity is expected to improve on all allotments. Additional forage which becomes available as a result of land treatments would be allocated according to criteria outlined in the forage allocation portion of Chapter 2.

TABLE 4-20

Twenty-Year AUM Projection
Alternative 3 - Increased Livestock Use

Allotment	Inventoried* Carrying Capacity	Projected AUM Changes	Percent Change from Carrying Capacity
AEC Riverfield	607	+1,637	+270
Big Desert	33,222	+21,240	+64
Big Butte	3,414	+752	+22
Bowers	20	0	0
Cedar Butte	901	+88	+10
Cinder Cone	1,020	+376	+37
Cox's Well	1,588	+395	+25
East Butte	123	+197	+160
Hells Half-Acre	4	+28	+700
Houghland	2,499	+174	+7
Huddles Hole	45	+35	+78
Judge	8	+14	+175
Klempel	13	+3	+23
Moonshine	573	+52	+9
Mooreland	262	+434	+166
Muirbrook	2	5	+250
No. 2 Well	1,301	+683	+52
Quaking Aspen	5,637	+967	+17
Riverfield	203	+903	+445
Rock Corral	1,200	1,274	+106
Rudeen	826	+111	-20
Smith	2,386	+913	+38
Springfield	2,729	+767	+28
Sunset	1,322	+320	+24
Webb	14	+78	+557
TOTAL	59,919	+31,446	+52%

* This figure does not represent initial stocking rate for this alternative.

Riparian Vegetation

Vegetation allocations and grazing management would be the same as described in the Proposed Action.

Summary

This alternative would have negative, short-term impacts due to grazing beyond the carrying capacity on 15 allotments totaling 249,697 acres (43 percent of the EIS area). Positive impacts to vegetation would become obvious once land treatments become established.

This alternative would benefit vegetation in the EIS area in the following ways.

1. Revised spring turn-out dates would satisfy physiological needs of forage plants.
2. Implementing grazing systems would achieve a more even distribution of livestock use and meet physiological needs of forage plants.
3. Undertaking land treatments would maximize grass and forb production on 152,893 acres.

Range condition

	Good	Fair	Poor	Treated	Disturbed
Present	104,129	279,460	36,113	46,732	114,397
Future	154,508	321,158	21,807	69,682	13,676

Cover

Present	Future
59%	61%

AUM Projection

Present	Future
59,919 AUMs	91,365 AUMs

B. SOILS

This alternative would increase the livestock grazing of vegetation cover and potential erosion rates on 18 allotments (63,234 acres). Erosion rates would not change on 11 allotments (401,856) and would decrease on 6 allotments (115,781 acres).

Decreased erosion rates would result from grazing systems and from land treatments. The allotments with no change in erosion rates would be due to the improvement of the land treatment. The increased erosion rates would result from overstocking.

Alternative 3 has a greater potential for accelerated erosion than the Proposed Action. Land treatment efforts should be successful. Some additional land treatment projects would be done on soils with lower fertility and production capacities. The recovery response, the amount of vegetation production, and the canopy cover of the additional 72,393 acres would be lower than the original 80,500 acres.

The impacts of overstocking and proposed land treatments increase the susceptibility of the soil to accelerated erosion rates. The additional land treatments would further decrease the grazing pressure from the surrounding, untreated land. Soil productivity levels would increase on allotments with decreased erosion rates, decrease on allotments with increased erosion rates, and should remain the same if the erosion rates do not change. Soil compaction would increase on 18 allotments that do not show a reduction in erosion rates.

Summary

No change in erosion rates would show on 11 allotments, 8 would show an increase in erosion rates, and a decrease on 6 allotments. The long-term, annual soil erosion rate would increase.

C. WATER RESOURCES

Watershed Condition

Upland watershed condition would decline (see Appendix F-2). Impacts associated with reservoir and pipeline construction would have similiar soil problems as those in the Proposed Action.

Land treatments on about 72,393 acres would create short-term increases in runoff and sedimentation (Lusby 1979). As ground cover is re-established, it would reduce runoff and sedimentation to levels below pre-treatment levels.

Water Use

Water use by livestock would be increased slightly.

D. WILDLIFE

Wildlife populations could be expected to decrease slightly under Alternative 3. The allocation of forage is not expected to have a significant impact on wildlife under this alternative. Additional land treatments have the most potential for adverse impacts on wildlife. All impacts outlined in the Proposed Action would be increased under this alternative. Table 4-21 shows the number of acres of each habitat condition class that could be impacted by this alternative.

TABLE 4-21

Treatment by Habitat Condition Class in Acres

	Good	Fair-1	Fair-2	Poor-1	Poor-2
Spray	10,401	5,602	6,379	-	-
Plow and Seed	2,304	2,778	6,540	-	9,650
Burn	3,952	21,400	1,053	11,820	10,486

Treated areas would be replanted with vegetation most suitable to livestock, such as crested wheatgrass. The expanse of this monoculture type situation could significantly reduce wildlife populations.

Spraying would be done in the spring. This treatment could impact strutting sage grouse, nesting sage grouse and non-game birds, antelope fawning, and sensitive species. Table 4-22 and 4-23 show the numbers of acres of antelope fawning and wintering ground, strutting ground, and nesting habitat that could be impacted by this alternative.

TABLE 4-22

Treatments in Antelope Areas

Treatment	Fawning Area	Wintering Area
Spray	11,000	12,545
Plow and Seed	4,230	11,350
Burn	5,125	3,165

TABLE 4-23

Treatments in Sage Grouse Areas

Treatment	Number of Strutting Grounds	Acres of Nesting Habitat
Spray	7	16,660
Plow and Seed	2	9,410
Burn	9	17,550

TABLE 4-24

Wildlife Summary
Alternative 3 - Increased Livestock Use

	Management System		Range Management	
Species	Present	Increased Livestock	Present	Increased Livestock
Antelope	Competition in winter sheep areas.	Increased level of competition.	Lack of adequate water resources.	Increase in water sources.
			Mixture of native habitat types.	Conversion of 34,317 acres of native range.
Mule Deer	No Conflict	No change.	Lack of water sources.	Increase in water sources.
Sage Grouse			Lack of water.	Increase in water sources.
	Livestock use prior to peak of hatching.	Increased disturbance in nesting areas.	81 strutting grounds.	18 grounds in areas to be treated. 100% loss of strutting males on 7 grounds to be sprayed.
	Disturbance by sheep trailing in Big Desert allotment.	Increased disturbance.		
Non-game	No conflicts.	Possibility of conflict increases with grazing.	Good mixture of habitat types.	Conversion of 34,713 acres of native range.
Sensitive Species	Disturbance of nesting birds.	Increased level of disturbance.	Prey base stable.	Major changes in prey number and type due to vegetation treatments.

E. CULTURAL RESOURCES

Adverse impacts on cultural resource sites would increase. Proposed vegetation manipulation (152,893 acres) could damage many unrecorded sites regardless of the inventory level employed to detect sites. Erosion effects would increase. Road construction and vegetation removal would expose more sites to discovery and damage by collectors and vandals.

F. VISUAL RESOURCES

Impacts from this proposal would be similar to those in the Proposed Action. The proposed 2,100-acre plow and seed project would be inconsistent with VRM objectives for Class II areas, and would degrade the existing visual resources. Other proposed projects in areas with a Class IV rating would have no discernible adverse impacts and are consistent with VRM objectives.

G. RECREATION

This alternative could decrease the opportunities to hunt big and upland game and for wildlife observation. In comparison to the Proposed Action, this alternative calls for a large increase in brush control (89.4%). It can therefore be assumed that most all wildlife populations would decrease, also decreasing recreation opportunities.

H. ECONOMICS

Income: Livestock-Related

This alternative sets grazing use at a level equal to the operator's active preference. The overall change from 5-year average use is an increase of 49 percent. This varies greatly by class of livestock and to a lesser extent by group within each class. Cattle group 2 gains 8 percent while sheep group 1 gains 123 percent (Table 4-25). Annual income gains from these AUM increases would total $81,000 (Table 4-26). This would represent 3 percent of the EIS area ranch income and 1/2 of 1 percent of the regional livestock income. Because of the ways cattle groups 1 and 2 graze BLM lands (spring use only), additional AUMs do not increase their income. In fact, if they use additional AUMs this necessitates increasing herd size and carrying those cattle through the remainder of the year. Because of the high cost of alternative feeds, this causes those operators to lose money by utilizing the extra BLM AUMs. If these groups did not utilize these extra AUMs and avoid this income loss, the income gain for this alternative would be $152,000 annually.

TABLE 4-25

Changes by Group
Alternative 3 - Increased Livestock Use

Group	Description	Number of Operators	Active Preference	Average Use	Proposed Use	Percent Change From Active	Percent Change From Average
Cattle 1	Spring Grazing - less than 300 head	27	5,861	4,781	5,861	0	+23
Cattle 2	Spring Grazing - 300 head or more	11	10,814	9,989	10,814	0	+ 8
Cattle 3	Spring, Summer and Fall Grazing - less than 10 percent dependency	16	1,224	1,086	1,224	0	+13
Cattle 4	Spring, Summer, and Fall Grazing, - 10 percent or greater dependency	12	13,073	10,174	13,073	0	+23
Total cattle		66	30,972	26,030	30,972	0	+19
Sheep 1	less than 5,000 ewes	13	16,796	7,518	16,796	0	+123
Sheep 2	5,000 ewes or more	8	17,671	10,391	17,671	0	+ 70
Total sheep		21*	34,467	17,909	34,467	0	+ 92
TOTALS		87	65,439	43,939	65,439	0	+ 49

* Does not include data for the U.S. Sheep Experiment Station.

The implementation of range improvements would gradually increase the number of AUMs available to ranchers. By the end of the twentieth year, there would be 92,108 AUMs available. This would be a 40 percent increase from active preference and a 109 percent increase from average use. Utilization of these additional AUMs would cause the ranchers to lose money, reaching $120,000 annually after 20 years.

Income: Regional

The BLM would spend $2.3 million to install range improvements and perform land treatments under this alternative. Roughly $405,000 of this amount would be spent in the three-county regional economy. The range improvements would be installed over a 5-year period and the land treatment within 15 years. Maintenance of the range improvements would cost a total of $27,000 annually, of which $16,000 would be spent locally.

Implementation of this alternative would decrease the number of big game and upland game hunter days in the EIS area. These decreases in hunter days would cause an income loss of $2,700 annually by the twentieth year.

Income changes due to changes in AUM levels, construction activities and recreation create additional, or secondary, impacts to the regional economy. Initially, these secondary income changes would be an annual gain of $18,000. By the twentieth year the secondary change would be an annual loss of $14,000. These secondary gains and losses would be spread throughout the entire regional economy.

The net present worth of the regional income changes associated with this alternative would be +$827,000.

Employment

With this alternative, there would be an initial employment gain of 11jobs (+5 direct livestock, +2 secondary livestock, +4 direct construction). Over the life of the alternative, this would change until by the twentieth year when there would be a loss of 4 jobs (-4 direct livestock, -1 secondary livestock, +1 construction).

Ranch Consolidation and Conversion

This alternative would not significantly impact ranch consolidation and conversion.

Capital Position

Because this alternative sets the initial stocking rate equal to the current active preference, there would be no impact to capital position.

TABLE 4-26

Maximum Livestock Production - Rancher Income Change
Alternative 3 - Increased Livestock Use

Group	Change/Operator	Total Change
Cattle 1	-$ 761	-$ 20,547
Cattle 2	-$4583	-$ 50,413
Cattle 3		0
Cattle 4	+$ 200	+$ 2,400
Subtotal		-$ 68,560
Sheep 1	+$8774	+$114,062
Sheep 2	+$4489	+$ 35,912
Subtotal		+$149,974
TOTAL		+$ 81,414

Summary

This alternative would initially create an annual income gain of $81,000 to the EIS area livestock operators. By the end of 20 years, this would have changed to a loss of $120,000. Roughly $2.3 million would be spent by the BLM on range improvements, $405,000 of which would be spent locally. Annual maintenance of the range improvements would cost $27,000 of which $16,000 would be spent locally.

Secondary income gains would initially be $18,000. By the twentieth year, this would change to an annual loss of $14,000.

The net present worth of the income changes to the regional economy would be +$827,000.

There would be an initial employment gain of 11 jobs. After 20 years, this would have changed to a loss of 4 jobs.

Neither ranch consolidations or capital position would be impacted by this alternative.

I. SOCIAL

The impacts and analysis for Alternative 3 are the same as for the Proposed Action.

ALTERNATIVE 4

GRAZING REDUCTIONS WITH MINIMAL IMPROVEMENTS

A. VEGETATION

Forage Allocation

Forage would be allocated exactly the same as the Proposed Action.

Grazing Management

Seasons of use and grazing systems would be the same as described in the Proposed Action, except that seasonal grazing is proposed for Bowers, Cox's Well and Klempel allotments. Four allotments would be combined to create two new allotments: Moonshine and East Butte, and Riverfield and AEC Riverfield. By combining these allotments, reductions would be eliminated in the AEC Riverfield allotment. In both cases, deferred grazing systems could be applied without additional fencing costs.

Grazing management would be transferred to the Idaho Department of Lands as described in the Proposed Action.

The vegetation resource would be managed more intensively, and would lead to substantial improvements in range condition and trend. Table 4-27 projects changes in ecological condition to the year 2000. See Appendix E-6 for condition by allotment. Cover would also be expected to increase (Table 4-3).

TABLE 4-27

Condition Class Summary in 20 Years
Alternative 4 - Grazing Reductions
with Minimal Improvements

	Good	Fair	Poor	Treated	Disturbed
Present	104,129	279,460	36,113	46,732	114,397
Future	202,219	304,490	14,177	47,116	12,829

Range Developments

This alternative is proposed in the event that there are limited range betterment funds. Projects are limited to those allotments receiving reductions except for Rock Corral and the Big Desert sheep allotments. Proposed projects are necessary for implementing grazing systems and improving livestock distribution. Vegetation manipulation would be limited to burning except for a seeding planned for halogeton control. Range improvements are listed by allotment in Table 2-14. Livestock reductions would be made during land treatment to ensure adequate rest for plant recovery or establishment.

The proposed well in Rock Corral would provide water to portions of adjacent allotments. These areas are in good condition but are inaccessible due to lack of water. Range improvements in the Big Desert sheep allotment would establish an alternative sheep drive trail and restore the existing drive trail, as well as help to control halogeton. A well is also planned to provide water for improved livestock distribution in the Big Desert allotment; it would serve as a back-up well in the Cox's Well allotment.

The maximum number of acres proposed for burning is 58,200. Burning would take place on allotments with brush invasion problems (Table 2-14). This land treatment would alter vegetation types by maximizing grass and forb production and decreasing brush.

In an indirect way, proposed structural developments also contribute to the rise in productivity, because these development are needed to implement grazing systems. Productivity is projected to increase from 59,919 AUMs to 88,864 AUMs (Table 4-28) as a result of structural developments and land treatments. Most impacts from structural developments would be adverse but short-term (Table 4-29). All impacts would be minor when compared to gains achieved through improved livestock distribution.

Riparian Vegetation

Forage allocation and grazing management would be the same as described in the Proposed Action.

Summary

Alternative 4 would benefit vegetation in the following ways.

1. Adjusted stocking rates and revised spring turn-out dates would better satisfy physiological needs of forage plants.
2. Implemented grazing systems would achieve better distribution of livestock use and help meet the physiological needs of forage plants.
3. Land treatments would maximize grass and forb production on 63,000 acres.

TABLE 4-28

Twenty-Year AUM Projections Alternative 4 - Grazing Reductions with Minimal Improvements

Allotment	Inventoried* Carrying Capacity	Projected AUM Changes	Percent Change from Carrying Capacity
AEC Riverfield	607	+102	+17
Big Desert	33,222	+21,240	+64
Big Butte	3,414	+416	+12
Bowers	20	+4	+20
Cedar Butte	901	+88	+10
Cinder Cone	1,020	+376	+37
Cox's Well	1,588	+458	+29
East Butte	123	+12	+10
Hells Half-Acre	4	0	0
Houghland	2,499	+342	+14
Huddles Hole	45	+35	+78
Judge	8	0	0
Klempel	13	+3	+23
Moonshine	573	+56	+10
Mooreland	262	+434	+166
Muirbrook	2	+5	+250
No. 2 Well	1,301	+630	+48
Quaking Aspen	5,637	+933	+17
Riverfield	203	+263	+130
Rock Corral	1,200	+1,274	+106
Rudeen	826	+292	+35
Smith	2,386	+550	+23
Springfield	2,729	+1,011	+37
Sunset	1,322	+417	+32
Webb	14	+4	+29
TOTALS	59,919	+28,945	+48%

* This figure also represents initial stocking rate except for Muirbrook allotment.

TABLE 4-29

Comparison of Long- and Short-Term Impacts
Alternative 4 - Grazing Reductions
With Minimal Improvements

Range Improvements	Units	Total	Acres Disturbed Per Unit		Total Acres Disturbed	
			Short-term	Long-Term	Short-Term	Long-Term
Wells	No.	3	1	1	3	3
Pipelines	Miles	24	1.2	0	28.8	0
Troughs	No.	15	.1	.1	1.5	1.5
Reservoirs	No.	3	.5	.5	1.5	1.5
Storage Tanks	No.	4	1.0	1.0	4	4
Fences	Miles	32	2	0	64	0
Cattleguards	No.	7	.01	.01	.07	.07
Roads	Miles	5	2.5	2.5	12.5	12.5
Plow and Seed	Acres	4,800	1.0	0	4,800	0
Burn	Acres	58,200	1.0	0	58,200	0
TOTALS					63,115.37	22.57

Range Condition

	Good	Fair	Poor	Treated	Disturbed	Total
Present	104,129	279,460	36,113	46,732	114,397	580,831
Future	202,219	304,490	14,177	47,116	12,829	580,831

Cover

Present	Future
59%	62%

Production

Present	Future
59,919 AUMs	88,864 AUMs

B. SOILS

The impacts resulting from livestock reduction would be similar to those in the Proposed Action. The impacts of range improvements and manipulation would be similar in value but differ in magnitude (acres involved) from the Proposed Action.

The reduced stocking rate under this alternative would help increase vegetation cover from 59 to 62 percent. This would decrease potential erosion rates on 11 allotments (261,156 acres). Erosion rates would show no change on the remaining 14 allotments (319,715 acres).

Although stocking rates would be lower where cattle still gather, (such as water troughs, shade and streams), these areas would still receive intensive use. Because cover, compaction and productivity in these areas would not increase significantly, no beneficial effects would be seen in these concentrated use areas. The decrease in trampling due to fewer cattle would help reduce the compaction problem and the associated problems of accelerated runoff and erosion. A decrease in compaction would allow greater infiltration rates (greater soil moisture), especially during high intensity rainstorms in spring, summer and fall. Increased soil moisture would allow the plant community to produce more forage. A return of a portion of the vegetation to the soil would help improve the soil fertility level.

Plow and seed on 4,800 acres, and burn projects on 58,200 acres would cause adverse, short-term impacts as described in the proposed action. The surface would be bare of vegetation during the first growing season, making the potential for erosion more than 200 percent higher than normal. Within two growing seasons, the erosion rates should stabilize close to normal rates.

Summary

This alternative would improve watershed conditions more than the Proposed Action. Vegetation cover would be increased, and overall erosion and compaction would be decreased. The impacts from land treatment would be similar to those in the Proposed Action.

C. WATER RESOURCES

Watershed Condition

The amount of improvement in upland watershed from this proposal would be second only to the no grazing alternative (see Appendix F-2). Reducing livestock grazing would reduce the amount of vegetation cover livestock consume, benefiting watershed condition.

Impacts to the Flat Top watershed would be the same as those in the proposed action.

Water Availability and Use

Because water development would be reduced, less water would be available for livestock and wildlife.

D. WILDLIFE

Forage allocations under this alternative would be the same as the Proposed Action. Sufficient forage would be available for present and future populations.

The grazing systems would have the same impacts as analyzed in the Proposed Action. Range development projects would have the same impacts but to a lesser degree because fewer projects would be involved. A 39 percent increase in the antelope population and an 11 percent increase for sage grouse are projected.

Land treatment projects would cause significantly less impact than the Proposed Action. The proposed plow and seed treatment in the Big Desert allotment is in poor-2 condition class and would be an insignificant habitat loss when compared to the amount of habitat available. Burning would produce less impacts than plow and seed, and spraying. The results of burning would be the same as discussed in the Proposed Action. See Table 4-30 for a summary of wildlife impacts.

E. CULTURAL RESOURCES

Cultural resource sites should be threatened by fewer adverse impacts than those expected from the Proposed Action. Impacts from forage allocation and grazing systems should change very little. Since fewer

TABLE 4-30

Wildlife Summary
Alternative 4 - Grazing Reductions with Minimal Improvements

	Management Systems		Range Improvements	
Species	Present	Minimal Improvements	Present	Minimal Improvements
Antelope	Competition in winter sheep areas.	No change	Lack of adequate water sources.	Increase in water sources and 39% increase in population projected.
			Mixture of native habitat types.	Mixture would be enhanced by burning 58,200 acres.
Mule Deer	No conflicts	No change	Lack of water.	39% increase in population.
Sage Grouse	Livestock use prior to peak of hatching.	No change	Lack of water.	11% increase in population.
	Disturbance by sheep trailing in Big Desert allotment.	No change	81 strutting grounds.	17 grounds in area to be burned.
Non-game animals	No conflicts	No change	Good mixture of habitat types.	Mixture enhanced by burning.
Sensitive Species	Disturbance of nesting birds.	No change	Prey base stable.	Some changes in prey numbers and type due to changes in vegetation by burning.

acres would be disturbed by vegetation manipulation, there should be fewer adverse impacts on cultural resources. Plowing and seeding 4,800 acres could still accidentally damage some sites. Reduced road construction and construction and improvement could limit indirect impacts on sites (less improved access for artifact collectors).

Summary

Alternative 4 would increase impacts over present situation, but would create fewer adverse impacts than the Proposed Action. Reducing livestock numbers would benefit cultural resource sites by reducing trampling and soil erosion. Fewer adverse impacts would result from vegetation manipulation.

F. VISUAL RESOURCES

This alternative should have no incompatible visual impacts for the VRM Class IV.

G. RECREATION

As in the Proposed Action, the water projects in this proposal would have a beneficial impact on wildlife. By providing wildlife water sources, deer and antelope populations should greatly increase, though not by 100 percent as in the Proposed Action. With increased big game populations, the Idaho Department of Fish and Game should increase the number of hunting permits issued for the EIS area, thus increasing the number of hunter days.

Again, as in the Proposed Action, if mitigating measures are followed, the brush control projects should not harm sage grouse. Hunter days will probably still increase at the rate of 10 percent over the next 10 years and increase from 2,287 to 2,516 days.

The proposal to build 5 miles of road would provide greater access to ORV users, but the overall effect will be negligible. Fences, as in Proposed Action, would have little impact on ORV use.

H. ECONOMICS

Income: Livestock-Related

The initial AUM allocation would be the same with this alternative as in the Proposed Action. The total annual income change as a result of this alternative would be a gain of $121,000 (the same as the Proposed).

The implementation of range improvements would gradually increase the number of AUMs available to ranchers. By the end of 20 years, 89,587 AUMs would be available. This would be a 36 percent increase above active preference and a 103 percent increase above average use. Utilization of these additional AUMs would cause the ranchers to lose money, reaching $92,000 annually after 20 years.

Income: Regional

The BLM would spend $655,000 to install range improvements and perform land treatments. Roughly $120,000 of this amount would be spent in the local economy. Maintenance of the range improvements would cost $10,300 annually, $6,200 of which would be spent locally.

Implementation of this alternative would increase the number of big game and upland game hunter days and would cause an income gain of $3,200 annually by the twentieth year.

Income changes due to changes in AUM levels, construction activities and recreation create additional, or secondary, impacts in the regional economy. Initially, these secondary impacts would be an annual income gain of $27,000. This would gradually change until by the twentieth year the secondary impact would be an annual income loss of $10,000. These secondary gains and losses would be spread throughout the entire regional economy.

The net present worth of the regional income changes associated with this alternative would be +$833,000.

Employment

With this alternative there would be an initial employment gain of 11 jobs (+8 direct livestock, +2 secondary livestock, +1 direct construction). Over the life of this alternative, this would change until by the twentieth year when there would be a loss of 4 jobs (-3 direct livestock, -1 secondary livestock.)

Ranch Consolidation and Conversion

This alternative would not significantly impact ranch consolidation and conversion.

Capital Position

Impacts to capital position under this alternative would be the same as with the Proposed Action.

Summary

This alternative would initially create an annual income gain of $121,000 in the local livestock industry. By the end of 20 years, this would have changed to an annual loss of $92,000. Roughly $655,000 would be spent by the BLM on range improvements, $120,000 of which would be spent locally. Annual maintenance of the range improvements would cost $10,300 of which $6,200 would be spent locally.

Secondary income gains would initially be $27,000 annually. By the twentieth year this would change to an annual loss of $10,000.

The net present worth of the regional income changes would be +$833,000.

There would be an initial employment gain of 11 jobs. After 20 years this would have changed to a loss of 4 jobs.

Neither ranch consolidations or capital position would be significantly impacted by this alternative.

I. SOCIAL

The impacts and analysis for Alternative 4 are the same as the Proposed Action.

SHORT-TERM USE VERSUS LONG-TERM PRODUCTIVITY AND IRREVERSIBLE OR IRRETRIEVABLE COMMITMENT OF RESOURCES

The relationship between short-term use of the EIS area and its long-term productivity are shown on Table 4-31. Also shown are how the irreversible and irretrievable commitment of resources compare to these uses.

For the purpose of this analysis, "irreversible" describes any action, impact or use which is not capable of being reversed. "Irretrievable" means irrecoverable; once used, not readily replaceable.

Short-term uses cover a time frame of 15 years. Long-term productivity goes beyond 15 years.

TABLE 4-31

Relationship Between Short-term Uses of Man's Environment and the Maintenance and Enhancement of Long-term Productivity and Irreversible or Irretrievable Commitments of Resources

Alternative	Short-Term Use	Long-Term Productivity	Irreversible	Irretrievable
Proposed Action	Initially there would be an annual income loss to ranchers. 17 sage grouse strutting grounds would be altered. 14,640 acres of land treatment would decrease quality of antelope forage. 2,100 acres of plow and seed would degrade the visual resource.	53% more available AUMs in a minimum of 20 years after implementation. Overall productivity would increase.	None	Loss of forage and water consumed by livestock. Loss of moneys, fuel and material used to implement this plan. Some cultural resources could be lost through land treatments.
No Action	Present uses would continue.	Overall decrease in weight gains in livestock. About 250,000 acres would decrease in productivity and condition. Most of the unit would show a slight improvement in condition. Soil erosion would increase.	None	Loss of topsoil. Potential disturbance of cultural sites.
No Livestock Grazing	Annual income loss to ranchers of $2.2 million.	Decrease in livestock production. Decline in available browse for wildlife; loss of waterfowl nesting areas along Snake River. Increase in ecological condition with a decrease in overall productivity. Soil and watershed conditions would approach optimum. 53% more available AUMs in 20 years after implementation.	None	Loss of 145 jobs in the livestock industry. Potential for 50 livestock operators not remaining in business in their present form.

Alternative	Short-Term Use	Long-Term Productivity	Irriversible	Irretrievable
Increased Livestock Use	Livestock use would increase to current active preference level. 2,100 acres of plow and seed would degrade the visual resource.	Net income gain to ranchers of $152,000 annually. Continued over-obligation of vegetation on 14 allotments. Forage production for livestock would increase. Erosion would increase and watershed conditions would decline. Almost all wildlife numbers would decline slightly. 53% more available AUMs in 20 years after implementation.	None	Loss of unrecorded cultural sites and damage to others.
Grazing Reductions with Minimal Range Improvements	Initially there would be an annual income loss to ranchers. 17 sage grouse strutting grounds would be altered.	48% more available AUMs in a minimum of 20 years after implementation. Ecological productivity and overall productivity would increase. Wildlife populations would increase but less than under the proposed action.	None	Loss of forage and water consumed by livestock. Loss of moneys, fuel and material used to implement plan. Some cultural resources could be lost through land treatments.

Chapter 5

Consultation and Coordination

beardless wheatgrass

The planning issues related to rangeland management were used to develop the proposed action in this EIS. The issue identification process for the land use plan involved individual contacts with other federal agencies, state agencies, county governments, range users, communication site applicants, special interest groups, and the Idaho Falls District Advisory Council. The District held open houses to solicit ideas and issues from the general public. The evolution of the proposed action through the BLM planning process is shown in Appendix B.

The following list includes government agencies, organizations, and individuals potentially affected by land use decisions in the Big Desert areas.

Federal Agencies

National Advisory Council on Historic Preservation
Department of Interior
    Bureau of Indian Affairs
    Fish and Wildlife Service
    Geological Survey
    Heritage Conservation and Recreation Service
    National Park Service
Department of Agriculture
    Aberdeen Experiment Station
    Agriculture Stabilization and Conservation Service
    Farmers Home Administration
    Soil Conservation Service
    Environmental Protection Agency
    Dubois Sheep Experiment Station
Department of Energy

State Agencies

    Idaho Bureau of Community Affairs
    Idaho Bureau of Mines and Geology
    Idaho Department of Fish and Game
    Idaho Department of Health, Welfare and Environmental Services
    Idaho Department of Parks and Recreation
    Idaho Department of Lands
    Idaho Department of Water Resources
    State Historic Preservation Officer
    University of Idaho Extension Service
    Idaho State Clearinghouse

Local Agencies

    Mayor, Arco
    Butte County Agent
    Butte County Planning Commission
    Butte County Soil Conservation District
    Mayor, Blackfoot
    Bingham County Agent
    Bingham County Commissioners
    Bingham County Soil Conservation District

Blaine County Agent
Blaine County Commissioners
Mayor, Idaho Falls
Bonneville County Agent
Bonneville County Commissioners
Bonneville County Planning and Zoning
Bonneville County Soil Conservation District
Mayor, American Falls
Power County Commissioners
Power County Planning and Zoning
Power County Soil Conservation District

Elected Officials

Federal

Senator Steve Symms
enator James McClure
Congressman George Hansen

State

Senator Vearl Crystal
Senator Dane Watkins
Senator Marsden Williams
Representative Kert Johnson
Representative Wayne Tibbits
Representative Martin Trillhaase

Public Service Organizations

Public Lands Council

Other Organizations

AEC Sportsmen's Club
Alpine Club
American Fisheries Society
Blackfoot Motorcycle Club
Fort Hall Tribal Council
Idaho Conservation League
Idaho Environmental Council
Idaho Falls Gem and Mineral Society
Idaho Motorcyle Association
Idaho Motorcycle Club
Idaho Outdoor Association
Idaho State University
National Outdoor Coalition
Sierra Club
Fort Hall
Snake River Audubon Society
Tri-County Cattlemen's Association

Individuals

All grazing users

Appendixes

APPENDIX A
Allotment Acreage and Status

Section 3 Lands

Allotment	Federal	State	Private	INEL
AEC Riverfield	-	-	-	16,054
Big Butte	38,665	1,918	1,298	5,977
Big Desert	248,783	13,143	6,994	-
Bowers	320	-	-	-
Carter	1,949	9,565	-	-
Cedar Butte	12,622	899	1,840	-
Cinder Cone	12,052	1,280	-	-
Cox's Well	17,344	2,158	900	-
East Butte	1,183	760	5,370	-
Hell's Half Acre	176	-	-	-
Houghland	23,163	1,911	8,057	-
Huddle's Hole	652	-	1,671	-
Judge	80	-	-	-
Katseanes	1,275	2,558	-	-
Klempel	320	-	-	-
Moonshine	6,384	-	-	-
Moreland	7,469	643	642	-
Muirbrook	120	-	-	-
Nipples	3,602	10,639	1,265	-
No. 2 Well	23,896	1,428	-	-
Quaking Aspen	57,652	3,260	1,761	12,380
Riverfield	8,114	1,220	-	-
Rock Corral	10,752	640	-	-
Rudeen	10,153	726	-	-
Smith	20,233	638	-	-
Springfield	34,546	1,290	360	-
State Twin Buttes	1,200	10,878	-	-
Sunset	11,021	964	-	-
Webb	760	-	-	-
Whitehead	5,837	1,080	545	-
Sub totals	560,323	67,598	30,703	34,411

Section 15 Snake River Lands

Allotment	Federal	State	Private	INEL
Caldwell	131	-	-	-
Clough	38	-	-	-
Fullmer	67	-	-	-
Goodwin	39	-	-	-
Hamilton, H.	30	-	-	-
Hamilton, W.	51	-	-	-
Hill	83	-	-	-
Horrocks	45	-	-	-
Hoskins	128	-	-	-
Johnson	170	-	-	-
Maxmillion	63	-	-	-
McGovern	94	-	-	-
Mickelson	382	-	-	-
Nelson	264	-	-	-
Polatis	79	-	-	-
Robinson	364	-	-	-
Stecklein	210	-	-	-
Sub Totals	2,238	-	-	-
TOTALS	562,561	67,598	30,703	34,411

APPENDIX B

Evolution of the Proposed Action Through the Bureau Planning System

Single-Use Recommendations (MFP-1) Livestock	Other MFP-1 Resource Recommendations which Conflict	Multiple-Use Recommendations (MFP-2)	Rational for the Multiple-Use Recommendations	Resource Trade-Offs
1. RM 1.1 a. Implement AMPs with deferred grazing systems on 16 allotments totaling 299,457 acres. b. Develop the following facilities prior to implementation. 5 wells 28 miles of pipeline 32 troughs 3 reservoirs 21 storage tanks 81.0 miles of fence 12 cattleguards 3 miles of road 57,220 acres of vegetation manipulation. c. Allocate 24,261 AUMs of forage to livestock, and 478 AUMs to wildlife (deer and antelope). d. Delay spring turn-out until range readiness.	1. Allow no vegetation manipulation on Soil Association 8, SE of Arco. Allow no plowing, bush control, spraying or chaining. The Department of Energy (DOE) apposes road improvement on Idaho National Engineering Laboratory (INEL) for security reasons. Idaho Fish and Game and DOE want all fences near the INEL to be clip or let-down to allow for antelope passage in the winter.	1. a. Modify Step 2 to exclude Quaking Aspen. Develop rest rotation system on this allotment. b. Construct east-west fences near and on INEL to allow raising or lowering for antelope passage. Reduce plow and seeding to avoid Soil Association 8. Do not build or maintain roads on INEL. Limit vegetation manipulation to acreage needed to restore grazing reductions. Limit spraying to threetip sagebrush sites. Consultation with Idaho Fish and Game is necessary in job layout and design. Treatment areas can be designed to reduce visual impacts.	1. a. Deferred grazing systems are best applied to the season of use in these allotments. Quaking Aspen allotment has a season of use which best fits a rest rotation grazing system. Improved grazing management is an economical and effective way of increasing range condition and productivity. The grazing systems would be designed to meet the physiological needs of key forage plants. b. Improvement of roads on INEL rejected because of DOE recommendations. Fences in antelope areas made let-down to allow antelope passage. Spraying is the most effective means of controlling threetip sagebrush. These sites are producing far below potential. Development of improvements in conjunction with improved management is necessary to improve range conditions.	1. a. Implementation of AMPs would allow better distribution of grazing use. Long-term benefits would be beneficial because of increased production. b. No water haul roads would be built on INEL causing a decrease in the distribution. A reduction in vegetation manipulation would not allow for forage production over what is needed to restore grazing reductions. Vegetation manipulation would have a negative impact on wildlife and livestock. Long-term benefit would occur due to an increase in production and habitat availability. c. The available livestock forage would be reduced by 5,125 AUMs from active preference.

Single-Use Recommendations (MFP-1) Livestock	Other MFP-1 Resource Recommendations which Conflict	Multiple-Use Recommendations (MFP-2)	Rational for the Multiple-Use Recommendations	Resource Trade-Offs
			c. Allocation of forage to livestock should not exceed the carrying capacity. Wildlife demand should be satisfied.	In the short term, this would have a negative impact on the livestock industry. Wildlife demands would be satisfied.
			d. Spring turn-out would be delayed until range readiness to relieve pressure on spring ranges.	d. Beneficial impacts would occur because of increased vigor and production.
2. RM 1.2 a. Implement AMPs with season-long grazing on 7 allotments totaling 273,825 acres.	Wildlife recommended that no plowing be allowed. The Webb allotment is also recommended by Wildlife for increasing shrub cover. Lands recommends disposal of isolated tracts. Wildlife recommended managing isolated tracts.	a. Accept MFP-1 recommendation.	a. These allotments only have one pasture, so other systems would not work. They are too small to fence on sheep allotments not needing fencing.	a. Improved distribution would improve production and overall condition of the range.
b. Develop the following facilities prior to implementation of AMPs. 4 wells 9 miles of pipeline 4 troughs -- reservoirs 4 storage tanks 1.5 miles of fence -- cattleguards 5 miles of road 22,485 acres of vegetation manipulation 5,280 acres of seeding		b. Accept MFP-1 recommendation.	b. Range improvements are needed to provide more effective management through improved distribution. The method of brush control can best be determined on a case-by case basis on the ground.	b. Range improvements would improve wildlife distribution and increase habitat.
c. Allocate 35,821 AUMs of forage to livestock and 332 AUMs to wildlife (deer and antelope).		c. Accept MFP-1 recommendation.		c. The available livestock forage would be initially reduced by 165 AUMs from active preference. Wildlife demand would be satisfied.
d. Delay spring turn-out until range readiness.				d. Beneficial impacts could occur because of increased vigor and production.

	Single-Use Recommendations (MFP-1) Livestock	Other MFP-1 Resource Recommendations which Conflict	Multiple-Use Recommendations (MFP-2)	Rational for the Multiple-Use Recommendations	Resource Trade-offs
3.	RM 2.1 Transfer management of Carter, Nipples, State Twin Buttes AMP, Katseanes and Whitehead to the Idaho Department of Lands (IDL). Eventually the public lands in these allotments should be traded to the IDL.	No conflicts were identified.	Accept MFP-1 Recommendation.	The public land acreage in the above allotments is relatively small compared to the total area grazed. The allotments are primarily composed of grazing land controlled by the IDL. IDL supports this recommendation.	None.
4.	RM 2.2 Continue to authorize the U.S. Sheep Experiment Station use in the Mooreland allotment (7,469 acres) under a cooperative agreement.	Lands L-7.2 recommends exchanging this allotment to IDL.	Accept MFP-1 Recommendation. Continue authorizing grazing to U.S. Sheep Experiment Stations until exchange is completed.	The experiment station has expressed a need for continued use of this allotment. This use is in support of the experiment station's research objectives.	None.
5.	RM 2.3 Eliminate grazing on the Muirbrook allotment (120 acres).	No conflicts identified.	Accept MFP-1 Recommendation.	The public land plays a minor role in the permittee's operation, and the range is in an extremely depleted condition.	None.
6.	RM 3.1 Manage allotments on the Snake River lands to effect: 1. Proper carrying capacity. 2. Season of use based on the physiological needs of vegetation plus multiple use values.	WLA. 1 Restrict livestock grazing to season of 6/15-10/1. Do not exceed 50% utilization of available forage. WLA 1.1 Protect stream banks of Snake River from livestock use. WLA. 4.1 Reduce grazing on omitted lands to reduce overland movement of water.	Accept MFP-1 Recommendation with the following condition: Recognize that even though the omitted lands are under multiple use management, the highest resource value is for waterfowl habitat.	Waterfowl production has been identified as the prime use of the ommitted lands by USF&WS, IF&G and BLM biologists. Livestock grazing was identified as a tool to manage waterfowl habitat and production.	Management of livestock on the Snake River would benefit waterfowl production.

Single-Use Recommendations (MFP-1) Livestock	Other MFP-1 Resource Recommendations which Conflict	Multiple Use Recommendations (MFP-2)	Rational for the Multiple-Use Recommendations	Resource Trade-Offs
3. Percent public land factor.	Recreation 2.1A Manage omitted lands for recreational and wildlife habitat values. R 2.1E Restrict grazing on omitted lands according to wildlife requirements. VRM 2.16 Eliminate stream-side grazing along Snake River by fencing, management or reductions. VRM 2.17 Eliminate spring and early summer grazing on omitted lands to improve riparian vegetation and protect backwater streambanks.	Livestock grazing would be managed to improve and maintain a wide diversity of vegetation species, heights and age structures.		
7. RM-4.1 Create 3 new allotments on unallotted public land.	No conflicts were identified - possible conflicts with upland game should be investigated.	Investigate existing situation and consider any resouce conflicts prior to alloting grazing use. After resolving any conflicts, allocate grazing with Bureau manual 4110.1.	Grazing is a legitimate use on the public lands.	None.

APPENDIX C-1

Methodology for the Vegetation Inventory

The vegetation inventory for the Big Desert EIS area was conducted from September 1, 1978, to October 31, 1979. Field inventories and data analysis were completed during this time. The methods used in field inventory are described in the BLM Manual 4412.14.

Soil mapping and range condition mapping were conducted simultaneously. An Order 2 soil survey was completed for parts of Bingham and Power counties by the U.S. Soil Conservation Service (SCS) before the vegetation inventory began. BLM soil survey crews did an Order 3 soil survey on the remainder of the area. Soil-site correlations were verified by range conservationists and soil scientists from the SCS and BLM.

Production cages were placed on various site write-up areas (SWA) before the 1979 growing season to help estimate utilization.

Apparent trend information was collected at each ecological condition write-up area and clip plot location and recorded on BLM form ISO 4400-3. Photo trend plots provided additional trend data on three allotments: Smith, No. 2 Well and Springfield.

Vegetation was characterized at 2 of the 10 plots on each transect. Grasses and forbs were characterized within the 9.6-square foot weight estimation plot. Shrubs were characterized within a 1/100-acre circular plot measured from the center of the 9.6-square foot plot with an 11.7-foot rope.

A condition write-up or clip plot transect was completed in every pasture within each pasture during the vegetation inventory. A total of 119 clipping plot transects and 706 condition write-ups were completed for the Big Desert EIS area.

Data Analysis

The goal of the data analysis was to provide current range condition and production information which could be readily used in making management decisions. The methods used in the data analysis process are outlined in chronological order in Instruction Memorandum No. ID-78-85 (3/7/78). Involved in this procedure were two basic steps:
(1) correlation of soils data with potential natural plant communities to delineate ecological sites within the inventory area; and (2) calculation of current, total air-dry plant production (pounds/acre), the degree of grazing use the plant or plant community can withstand and maintain its

vigor, and range suitability criteria. A more detailed description of the anlysis follows.

The first step was the determination of current productive capabilities within each primary ecological site for each observed condition class (namely, fair, poor, good, or excellent - SCS 1976). The details of this process are explained by Burton and Miles (1978). It involves aggregating the clipping plot data into ecological sites (potential vegetal types) and then further stratifying into current vegetal types by condition class.

Mean production was calculated next for each vegetation class (that is, grass, forbs and shrubs) and for total production. Appropriate standard errors and confidence intervals were calculated using the "Student T Statistic" (alpha = .20 as suggested in original SVIM manual).

Once per acre production data have been calculated for each ecological site by condition class, the percentage of each ecological site by condition class within a particular soil mapping unit was calculated. After the acres of each mapping unit were determined on a pasture basis, final forage production was calculated using Automated Data Processing (ADP).

Because the Big Desert EIS area was inventoried during the drought of 1979, an adjustment was required to bring 1979's vegetation production up to an average year's production. Helgardia's formula was used to determine a correction factor. The formula estimates potential plant growth using a calculated actual and potential evapotransporation rates. A correction factor based on 65 percent of normal production was determined by using weather data from the Blackfoot area. To substantiate the 65 percent of normal adjustment, Morgan Pasture kipuka was clipped and compared to a 10-year production study of this kiupka. The kipuka was sampled in early October when many of the forbs had disintegrated; therefore, only grass production was used in the comparision which showed 65 percent of normal grass production.

Grazing Suitability

Included in the ecological site descriptive inventory was an assessment of a vegetation area's suitability for grazing. Suitability is defined as the adaptability of an area to grazing by livestock and wildlife (SRM 1974). A summary of acres unsuitable for livestock grazing by allotment is available upon request.

APPENDIX C-2

Vegetation Impact Analysis Method

Ecological Condition-Trend Prediction

The 20-year ecological condition response from grazing management was estimated for each alternative. When land treatments were proposed for an alternative, the condition response was adjusted to reflect these treated areas. Estimates were made with the knowledge of existing conditions and trends, and using related literature.

EXAMPLE ONE

Ecological Condition Acreages

	Poor	Fair	Good	Excellent	Treated
Current Situation	35	40	20	5	0
Projected situation from Grazing mgmt.	20	50	25	5	0
Projected Treatment	-15	-5	0	0	+20
Net condition response	5	45	25	5	20

Cover and Productivity Prediction

Cover and productivity estimates were derived directly from the projections of 20-year ecological condition. Resource inventory data, describing the site cover and productivity of each ecological site and condition class, were collected in 1978 and 1979 (see Appendix C).

The assumption was made: If an ecological site was projected to improve one condition class (such as from poor to fair), the resulting cover and productivity would be the same as other fair condition areas.

After 20-year ecological condition was predicted, cover and productivity values were recalculated. Computer data processing was used to make the calculations and insure their accuracy (see allotment Example Two, below).

EXAMPLE TWO

	Cover and productivity by Ecological Condition Poor	Fair	Good	Excellent	Treated
Ecological site effect cover (percent)	45	50	55	67	50
Ecological site productivity (usable forage-lbs/acre)	125	175	200	225	250
Current condition (acres)	35	40	20	5	0
Projected condition (acres)	5	45	25	5	20

current

$$\text{cover}= \frac{(45\%\text{x}35\text{ acres})+(50\%\text{x}40\text{ acres})+(55\%\text{x}20\text{ acres})+(65\%\text{x}5\text{ acres})}{100\text{ acres}} = 50\%$$

projected

$$\text{cover}= \frac{\underline{(45\%\text{x}5\text{ acres})+(50\%\text{x}45\text{ acres})+(55\%\text{x}25\text{ acres})}\\ +(65\%\text{x}5\text{ acres})+(50\%\text{x}20\text{ acres})}{100\text{ acres}} = 52\%$$

current

$$\text{productivity}= \frac{(125\text{ lbb/acre x }35\text{ acres})+(175\text{ lbs/acre x }40\text{ acres})+(200\text{ lbs/acre x }20\text{ acres})+(225\text{ lbs/acre x }5\text{ acres})}{100\text{ acres}}$$

= 165 lbs/acre usable forage

$$\text{projected productivity} = \frac{(125\text{ lbs/acre x }5\text{ acres})+(175\text{ lbs/acre x }45\text{ acres})+(200\text{ lbs/acre x }20\text{ acres})+(225\text{ lbs/acre x }5\text{ acres})+(250\text{ lbs/acre x }20\text{ acres}}{}$$

= 186 lbs/acre usable forage

APPENDIX D

Forage Allocation Methodology

To make a more equitable apportionment of forage between grazing animals, it is desirable to separate an animal's preference for each plant species with the degree to which the plant can withstand grazing (or herbage removal) and still maintain itself in a viable, healthy condition. The amount of use depends upon its stage in phenological development. It is also influenced by the amount of precipitation it receives after grazing.

Plant Use Factors

A use factor was applied to the production of each plant species to arrive at the total pounds of herbage that can be removed by grazing animals without affecting the viability of the plant. The herbage that can be removed by the grazing animal is designated as usable forage.

A use factor was not applied to unpalatable plants. Unpalatable plants are those not grazed by any ungulate (hoofed animal) except under heavy use.

A review of the literature shows that most grass species will, depending upon the time of year, tolerate herbage removal of up to 50 percent of its annual production by weight. The literature does not contain much information about the proper utilization of forbs and shrubs.

The following table shows use factors by plant class for perennial and annual species for the appropriate management category.

TABLE D-1

Percent Allocated Forage Using Proper Use Limits

Management Category	Vegetation Class	Season-of-Use			
		Spring	Summer	Fall	Winter
Intensive	Grass	50%	50%	50%	50%
	Forbs	50%	50%	50%	50%
	Shrubs	50%	50%	50%	50%
Less Intensive Management with Private	Grass	30%	40%	50%	50%
	Forbs	25%	25%	25%	25%
	Shrubs	30%	30%	30%	30%

Use factors are lower in the spring and early summer for two reasons: (1) defoliation of the plant any time during the growing period is harmful to the plant, and (2) production figures are based on mature weights, and plants have actually produced only part of their total production during this period.

Animal Diets

Data from various sources used fecal analysis to determine the animal preference or dietary requirements. Table D-2 reflects the dietary composition on a properly grazed range for various ungulates. Table D-3 shows the pounds consumed per month, and Table D-4 shows dietary composition of forage consumed by season.

TABLE D-2

Diet Composition of Certain Ungulates in Percent of Grass, Forb, Shrub

	Spring			Summer			Fall			Winter		
	G	F	S	G	F	S	G	F	S	G	F	S
Cattle	90	3	7	90	30	7	86	0	14	86	0	14
Mule deer	44	8	48	2	56	42	9	31	60	14	20	66
Antelope	23	22	55	5	33	62	9	22	69	4	12	84
Domestic sheep	35	37	28	35	37	28	22	1	77	25	0	75

TABLE D-3

Pounds of Forage Consumed per Month

	Pounds per months
Cattle	800
Mule deer	150
Antelope	85
Domestic sheep	162

TABLE D-4

Pounds of Grass, Forb and Shrub Consumed by Season

	Spring			Summer			Fall			Winter		
	G	F	S	G	F	S	G	F	S	G	F	S
Cattle	720	24	56	720	24	56	688	0	112	688	0	112
Mule deer	66	12	62	31	84	63	14	46	90	21	30	99
Antelope	20	19	47	4	28	53	8	19	59	3	10	71
Domestic sheep	57	60	45	57	60	45	36	2	125	40	0	122

Forage Production Determination

Since allotments are grazed during different seasons or portions of different seasons, seasonal dates were established.

Spring - April 1 through June 15
Summer - June 16 through August 31
Fall - September 1 through October 30
Winter - November 1 through March 31

To determine the amount of forage available for allocation, ecological sites were stratified by condition class. The total herbage production for each individual soil mapping unit was calculated using percent composition of each ecological site by condition class within the particular soil mapping unit. This percent composition was determined from a Order 3 soil survey (see data analysis section in Appendix C).

The per acre production of vegetation within each mapping unit was then multiplied by the percent of the proper use limits for each plant species within a vegetation class (shown in the proper use limits Table D-1). The following table shows how the amount of usable forage per acre is determined by season of year for each mapping unit by condition class. This example depicts the usable forage calculations for the intensive management category of Alternative 3.

TABLE D-5

Per Acre Usable Forage by Season for Mapping Unit A24 in Poor Condition

Species	Total Production Per Acre (air dry)	---Spring---		---Summer---		---Fall/Winter---	
		Use Factor	Pounds Forage[1]	Use Forage	Pounds Forage[2]	Use Forage	Pounds Forage[3]
Grass[4]							
Pone	2	.3	.6	.4	.8	.5	1.0
Pose	5	.3	1.5	.4	2.0	.5	2.5
Agsp	8	.3	2.4	.4	3.2	.5	4.0
Siky	10	.3	3.0	.4	4.0	.5	5.0
Stth	4	.3	1.2	.4	1.6	.5	2.0
Orhy	3	.3	.9	.4	1.2	.5	1.5
	32		9.6		12.8		16.0
Forbs[4]							
Phho	1	.25	.25	.25	.25	.25	.25
Phlo2	1	.25	.25	.25	.25	.25	.25
Phlox	4	.25	1.0	.25	1.0	.25	1.0
Other Forbs	3	.25	.75	.25	.75	.25	.75
	9		2.25		2.25		2.25

Species	Total Production Per Acre (air dry)	---Spring--- Use Factor	---Spring--- Pounds Forage[1]	---Summer--- Use Forage	---Summer--- Pounds Forage[2]	---Fall/Winter--- Use Forage	---Fall/Winter--- Pounds Forage[3]
Shrubs[4]							
Teca	1	.30	.3	.30	.3	.30	.3
Artrw	237	.30	71.1	.30	71.1	.30	71.1
Chvip	27	.30	8.1	.30	8.1	.30	8.1
Artr4	1	.30	.3	.30	.3	.30	.3
Ermil	1	.30	.3	.30	.3	.30	.3
Oppo	1	.30	.3	.30	.3	.30	.3
Chvi8	33	.30	9.9	.30	9.9	.30	9.9
Putr	1	.30	.3	.30	.3	.30	.3
	302		90.6		90.6		90.6[1]

[1] Result of first column times the second column.
[2] Result of first column times the fourth column.
[3] Result of first column times the sixth column.
[4] Plant abbreviations from SCS Idaho Plant List.

The usable forage per acre by vegetation class is then multiplied by the associated acres of a particular mapping unit within an allotment. The calculations of the allowable forage production determinations and annual allocations were completed for the EIS area using automated data processing (ADP). The following is an example of the usable forage by mapping unit and the total available forage on the Moonshine allotment.

TABLE D-6

Pounds of Allowable Forage by Season

Map Unit	Acres	Spring Grass	Summer Grass	Fall-Winter Grass	SP-SU-FW Forbs	SP-SU-FW Shrubs
48F	307	6,808	9,077	11,347	3,688	54,890
48/60F	359	7,795	10,394	12,992	3,594	54,236
419G	30	2,162	2,883	3,604	522	20,259
419G	4,019	282,230	376,307	470,384	68,082	1,632,108
422G	53	4,016	5,354	6,693	922	6,979
422F	52	1,129	1,506	1,882	625	8,841
424G	1,480	134,017	178,689	223,362	26,895	210,598
425G	84	7,296	9,728	12,160	1,423	11,604
	6,384	445,443	593,938	742,422	105,750	1,999,513

The palatable vegetation is used by livestock and wildlife; however, livestock are not allocated vegetation in unsuitable areas, but wildlife are. Therefore, to avoid over-allocation of vegetation to wildlife, their vegetal requirements (by class) were determined only on the suitable livestock range before the allocation process. Hence all wildlife forage requirements used were competitive with livestock.

Allocation Example

The maximum number of animals that can be grazed on this area is determined by dividing the pounds of forage produced by class of plant by the pounds of forage required per animal month for each season. The plant class that produces the least number of animal unit months (AUMs) is then the factor limiting the number of animals that can be grazed on the allotment. (An animal unit month, or AUM, is the amount of forage needed to sustain a cow for 1 month.) The Moonshine allotment is grazed by cattle, deer and antelope.

The following calculations are for spring use (2.5 months) only, and would also be calculated for the other two seasons of use.

Cattle

Grass 445,443 pounds ÷ 720 pounds / cattle AUM = 619 cattle AUMs
Forbs 105,750 pounds ÷ 24 pounds / cattle AUM = 4,406 cattle AUMs
Shrubs 1,999,513 pounds ÷ 56 pounds / cattle AUM = 35,706 cattle AUMs

A maximum of 248 cattle can graze in the spring period (619 AUMs ÷ 2.5 months = 248 animals). The limiting factor for cattle in this case is grass.

Deer

Grass 445,443 pounds ÷ 66 pounds / deer = 7,749 deer AUMs
Forbs 105,750 pounds ÷ 12 pounds / deer = 8,812 deer AUMs
Shrubs 1,999,513 pounds ÷ 72 pounds / deer = 27,771 deer AUMs

A maximum of 2,700 deer can graze for the 2.5 months of spring. The limiting factor for deer in this case is also grass.

Antelope

Grass 445,443 pounds ÷ 20 pounds / antelope = 22,272 antelope AUMs
Forbs 105,750 pounds ÷ 19 pounds / antelope = 5,566 antelope AUMs
Shrubs 1,999,513 pounds ÷ 47 pounds / antelope = 42,542 antelope AUMs

A maximum of 2,204 antelope can graze the spring period. The limiting factor is forbs in this case.

This method only maximizes AUMs within a single season and for a single kind of animal. The AUM figures for each species are not accumulative, but are only for that single season of use and kind of animal.

However, because more than one season is usually involved, a weighted dietary factor is used in determining the biological limit. The Moonshine allotment is grazed by cattle from April 21 to September 15 (21 weeks). Deer and antelope also use the area from May 1 through October 31 (13 weeks) and June 1 to August 31 (27 weeks) respectively. The weighted dietary requirement is determined by multiplying the forage consumed per animal in a month by vegetal class (see Table D-4) times the number of weeks in each season, divided by total weeks of that grazing period. This would be done for each of the grazing animals as follows.

Cattle (Spring = 8 weeks, Summer = 11 weeks, Fall-Winter = 2 weeks)
Grass (720 x 8) + (720 x 11) + (688 x 2) ÷ 21 = 717
Forbs (24 x 8) + (24 x 11) + (0 x 2) ÷ 21 = 22
Shrubs (56 x 8) + (56 x 11) + (112 x 2) ÷ 21 = 61
800 pounds/month

Antelope (Spring = 2 weeks, Summer = 11 weeks)
Grass (20 x 2) + (4 x 11) ÷ 13 = 6
Forbs (19 x 2) + (28 x 11) ÷ 13 = 27
Shrubs (47 x 2) + (53 x 11) ÷ 13 = 52
85 pounds/month

Deer (Spring = 7 weeks, Summer = 11 weeks, Fall-Winter = 9 weeks)
Grass (66 x 7) + (3 x 11) + (14 x 9) ÷ 27 = 23
Forbs (12 x 7) + (84 x 11) + (46 x 9) ÷ 27 = 53
Shrubs (72 x 7) + (63 x 11) + (90 x 9) ÷ 27 = 74
150 pounds/month

The weighted biological limit is determined as follows:
Grass (445,443 x 8) + (593,938 x 11) + (742,422 x 2) ÷ 21 = 551,510

Since the biological limit for forbs (105,750 pounds) and shrubs (1,999,513 pounds) is the same for all seasons, weighting is not necessary.

A multiple use recommendation in MFP-2 would be to allocate forage for 50 deer, 30 antelope and the balance for cattle.

The 50 deer would require the following pounds of forage from May 1 through October 31 (6 months):
Grass 50 deer x 23 pounds/deer x 6 months = 6,900 pounds
Forbs 50 deer x 43 pounds/deer x 6 months = 15,900 pounds
Shrubs 50 deer x 74 pounds/deer x 6 months = 22,200 pounds

The 30 antelope would require the following pounds of forage from June 1 through August 31 (4 months):
Grass 30 antelope x 6 pounds / antelope x 4 months = 720 pounds
Forbs 30 antelope x 22 pounds / antelope x 4 months = 3,240 pounds
Shrubs 30 antelope x 52 pounds / antelope x 4 months = 9,840 pounds

The total pounds required by deer and antelope are as follows:

	Grass	Forbs	Shrubs
Deer	6,900	15,900	22,200
Antelope	+ 720	+ 3,240	+ 9,840
	7,620	19,140	32,040

Once the wildlife forage requirements are figured, they are subtracted from the total available vegetation:

Grass	Forbs	Shrubs
551,510	105,750	1,999,513
-7,620	-19,140	-32,040
543,890	86,610	1,967,473

The balance is available for cattle and their dietary requirements are used to figure AUMs.

Grass 543,890 pounds ÷ 717 pounds / cattle AUM = 759 cattle AUMs
Forbs 86,610 pounds ÷ 22 pounds / cattle AUM = 3,937 cattle AUMs
Shrubs 1,967,473 pounds ÷ 61 pounds / cattle AUM = 32,254 cattle AUMs

Because grass provides the smallest number of AUMs for cattle, it is the limiting factor, and 15.8 head of cattle can be grazed in the allotment from April 21 to September 15 (759 AUMs ÷ 4.8 months = 158 cattle).

To determine how many cattle AUMs wildlife would need within the allotment, take the total wildlife grass pounds and divide it by the 717 grass pounds of the cattle dietary requirements, because grass is the limiting factor for cattle in this allotment. This would result in an 11 cattle AUM requirement for wildlife, or a loss of two cattle during the livestock grazing season. An equation of this would read as follows: 7,620 grass pounds for wildlife ÷ 717 grass pounds per cattle = 11 wildlife competitive cattle AUMs.

TABLE E-1

Present Range Condition in Acres

Allotment	Poor	Fair	Good	Treated	Disturbed	Total
AEC Riverfield	4,938	9,290	1,826			16,054
Big Desert	10,834	117,694	1,700	27,991	90,564	248,783
Big Butte	2,214	24,540	14,605	3,200	83	44,642
Bowers			320			320
Cedar Butte		9,547	982	2,007	86	12,622
Cinder Cone		5,439	5,300	960	353	12,052
Cox's Well		12,627	1,265		3,452	17,344
East Butte		994		160	29	1,183
Hells Half-Acre		176				176
Houghland		9,424	7,239	739	5,761	23,163
Huddles Hole			652			652
Judge					80	80
Klempel		320				320
Moonshine		4,737	1,647			6,384
Mooreland	380	5,337			1,752	7,469
Muirbrook					80	80
No. 2 Well	3,818	12,410	2,561	2,319	2,788	23,896
Quaking Aspen	9,465	37,904	16,979	376	5,308	70,032
Riverfield	3,704	3,791		619		8,114
Rock Corral		12	9,614	1,031	95	10,752
Rudeen			10,153			10,153
Smith		42	19,835	356		20,233
Springfield		19,571	4,035	6,974	3,966	34,546
Sunset		5,605	5,416			11,021
Webb	760					760
TOTALS	36,113	279,460	104,129	46,732	114,397	580,831

TABLE E-2

Projected Condition Class by Acres in 20 Years Proposed Action

Allotment	Poor	Fair	Good	Treated	Disturbed	Total
AEC Riverfield	3,638	7,590	4,826			16,054
Big Desert	3,814	174,170	30,349	32,550	7,900	248,783
Big Butte		17,093	22,605	4,861	83	44,642
Bowers			320			320
Cedar Butte		8,290	2,529	1,803		12,622
Cinder Cone		2,352	9,300	400		12,052
Cox's Well		7,500	9,344		500	17,344
East Butte		770	224	160	29	1,183
Hells Half-Acre		76		100		176
Houghland		10,350	9,663	689	2,461	23,163
Huddles Hole			652			652
Judge				30	50	80
Klempel		320				320
Moonshine		2,037	4,347			6,384
Mooreland	315	3,604	2,800		750	7,469
Muirbrook					80	80
No. 2 Well		3,121	15,411	5,364		23,896
Quaking Aspen	3,500	25,053	38,979	2,500		70,032
Riverfield	1,500	3,895	1,500	1,219		8,114
Rock Corral			10,752			10,752
Rudeen			10,153			10,153
Smith			20,233			20,233
Springfield		19,371	8,035	7,140		34,546
Sunset		1,500	9,521			11,021
Webb	410			350		760
TOTALS	13,177	287,092	211,543	57,166	11,853	580,831

TABLE E-3

Projected Condition Class by Acres in 20 Years
Alternative 1 - No Action

Allotment	Poor	Fair	Good	Treated	Disturbed	Total
AEC Riverfield	7,938	7,290	826			16,054
Big Desert	8,834	159,789	13,469	26,191	40,500	248,783
Big Butte	4,214	24,540	12,605	3,200	83	44,642
Bowers		320				320
Cedar Butte		8,290	2,529	1,803		12,622
Cinder Cone		2,352	9,300	400		12,052
Cox's Well		9,752	6,892		700	17,344
East Butte		994		160	29	1,183
Hells Half-Acre		176				176
Houghland		10,350	8,663	689	3,461	23,163
Huddles Hole			652			652
Judge					80	80
Klempel		320				320
Moonshine		2,037	4,347			6,384
Mooreland	315	3,604	2,800		750	7,469
Muirbrook					80	80
No. 2 Well	5,118	12,859	2,400	2,169	1,350	23,896
Quaking Aspen	13,070	40,906	16,056			70,032
Riverfield	3,100	4,395		619		8,114
Rock Corral			10,752			10,752
Rudeen		3,153	7,000			10,153
Smith		2,233	18,000			20,233
Springfield	3,540	20,571	3,125	5,510	1,800	34,546
Sunset	641	5,880	4,500			11,021
Webb	760					760
TOTALS	47,530	319,811	123,916	40,741	48,833	580,831

TABLE E-4

Projected Condition Class by Acres in 20 Years
Alternative 2 - No Livestock Grazing

Allotment	Poor	Fair	Good	Treated	Disturbed	Total
AEC Riverfield	4,554	9,350	2,150			16,054
Big Desert	8,834	159,789	13,469	26,191	40,500	248,783
Big Butte	2,214	13,019	26,875	2,451	83	44,642
Bowers			320			320
Cedar Butte		7,819	3,000	1,803		12,622
Cinder Cone		2,352	9,300	400		12,052
Cox's Well		7,500	9,344		500	17,344
East Butte		870	124	160	29	1,183
Hells Half-Acre		176				176
Houghland		9,350	10,663	689	2,461	23,163
Huddles Hole			652			652
Judge	10	10			60	80
Klempel		320				320
Moonshine		2,737	3,647			6,384
Mooreland	315	3,804	2,600		750	7,469
Muirbrook					80	80
No. 2 Well	3,000	11,500	5,387	2,309	1,700	23,896
Quaking Aspen	8,025	2,678	40,329			70,032
Riverfield	2,550	3,745	1,200	619		8,114
Rock Corral			10,752			10,752
Rudeen			10,153			10,153
Smith			20,233			20,233
Springfield		21,604	6,000	5,576	1,366	34,546
Sunset		3,300	7,721			11,021
Webb	400	360				760
TOTALS	29,902	279,283	183,919	40,198	47,529	580,831

TABLE E-5

Projected Condition Class by Acres in 20 Years
Alternative 3 - Increased Livestock Use

Allotment	Poor	Fair	Good	Treated	Disturbed	Total
AEC Riverfield		9,077	2,000	4,977		16,054
Big Desert	3,814	174,170	30,349	32,550	7,900	248,783
Big Butte	6,214	22,040	10,605	5,700	83	44,642
Bowers		320				320
Cedar Butte		8,290	2,529	1,803		12,622
Cinder Cone		2,352	9,300	400		12,052
Cox's Well		9,600	6,392		1,352	17,344
East Butte		523		660		1,183
Hells Half-Acre		76		100		176
Houghland		10,350	8,663	689	3,461	23,163
Huddles Hole			652			652
Judge				30	50	80
Klempel		320				320
Moonshine			6,384			6,384
Mooreland	315	3,604	2,800		750	7,469
Muirbrook					80	80
No. 2 Well	600	12,725	5,207	5,364		23,896
Quaking Aspen	8,409	41,067	16,056	4,500		70,032
Riverfield	1,404	3,791		2,919		8,114
Rock Corral			10,752			10,752
Rudeen		1,153	9,000			10,153
Smith			17,733	2,500		20,233
Springfield		19,871	7,535	7,140		34,546
Sunset	641	1,829	8,551			11,021
Webb	410			350		760
TOTALS	21,807	321,158	154,508	69,682	13,676	580,831

TABLE E-6

Projected Condition Class by Acres in 20 Years Alternative 4 - Grazing Reductions with Minimal Improvements

Allotment	Poor	Fair	Good	Treated	Disturbed	Total
AEC Riverfield	3,988	8,240	3,826			16,054
Big Desert	3,814	174,170	30,349	32,550	7,900	248,783
Big Butte		19,104	22,605	2,850	83	44,642
Bowers			320			320
Cedar Butte		8,290	2,529	1,803		12,622
Cinder Cone		2,352	9,300	400		12,052
Cox's Well		7,500	9,344		500	17,344
East Butte		770	224	160	29	1,183
Hells Half-Acre		176				176
Houghland		10,350	9,663	689	2,461	23,163
Huddles Hole			652			652
Judge	10	10			60	80
Klempel		320				320
Moonshine		2,037	4,347			6,384
Mooreland	315	3,604	2,800		750	7,469
Muirbrook					80	80
No. 2 Well		14,640	7,087	2,169		23,896
Quaking Aspen	3,500	27,553	38,979			70,032
Riverfield	2,100	3,895	1,500	619		8,114
Rock Corral			10,752			10,752
Rudeen			10,153			10,153
Smith			20,233			20,233
Springfield		19,669	8,035	5,876	966	34,546
Sunset		1,500	9,521			11,021
Webb	450	310				760
TOTALS	14,177	304,490	202,219	47,116	12,829	580,831

APPENDIX F

Sediment Yield

In the Pacific Southwest Interagency Committee (PSIAC) method of estimating sediment yields, nine factors are considered in determining the sediment yield rating (see following form). The sediment yield characteristic of each factor is assigned a numerical value representing its relative significance in the yield rating. The sediment yield rating is the sum of values for the appropriate characteristics for each of the nine factors. Conversion of the numerical rating to sediment yield is made using a graph (see BLM for 7310-16).

TABLE F-1

Present Annual Sediment Yield by Allotment

Allotment Name	Acres	Tons per Acre	Tons per Allotment
AEC Riverfield	10,915	0.2	2,183
	5,139	0.5	2,509
TOTAL	16,054		4,752
Big Butte	40,709	0.2	8,142
	9	0.5	5
	3,924	1.0	3,924
TOTAL	44,642		12,071
Big Desert	248,783	0.2	49,758
	112	0.5	56
	280	0.8	224
TOTAL	248,783		50,038
Bowers	320	0.2	64
Carter	1,879	0.2	376
	70	2.0	140
TOTAL	1,949		516
Cedar Butte	10,300	0.2	2,060
	92	0.5	46
	2,230	2.0	4,460
TOTAL	12,622		6,566
Cinder Cone	11,270	0.2	2,254
	782	1.0	782
TOTAL	12,052		3,036
Cox's Well	17,344	0.2	3,469
East Butte	1,183	0.2	237
Hells Half-Acre	176	0.2	34
Houghland	23,163	0.2	4,633

Allotment Name	Acres	Tons per Acre	Tons per Allotment
Huddles Hole	652	0.2	130
Judge	80	0.2	16
Katseanes	1,275	0.2	255
Klempel	320	0.2	64
Moonshine	2,335 4,049	0.2 2.0	467 8,098
TOTAL	6,384		8,565
Mooreland	7,469	0.2	1,493
Muirbrook	120	0.2	24
Nipples	3,602	0.2	720
No. 2 Well	23,896	0.2	4,779
Quaking Aspen	68,878 1,154	0.2 0.5	13,775 577
TOTAL	70,032		14,352
Riverfield	2,975 5,139	0.2 0.5	595 2,566
TOTAL	8,114		3,161
Rock Corral	10,752	.2	2,150
Rudeen	10,153	0.2	2,031
Smith	20,233	0.2	4,047
Springfield	34,546	0.2	6,909
State Twin Buttes	1,200	0.2	240
Sunset	11,021	0.2	2,204
Webb	760	0.2	152
Whitehead	5,837	0.2	1,167

SEDIMENT YIELD FACTOR RATING

SURFACE GEOLOGY (a)	SOILS (b)	CLIMATE (c)	RUNOFF (d)	TOPOGRAPHY (e)
(10) a. Marine shales and related mudstones and siltstones	(10) a. Fine textured; easily dispersed; saline-alkaline; high shrink-swell characteristics b. Single grain silts and fine sands	(10) a. Storms of several days' duration with short periods of intense rainfall b. Frequent intense convective storms c. Freeze-thaw occurrence	(10) a. High peak flows per unit area b. Large volume of flow per unit area	(20) a. Steep upland slopes (in excess of 30%) b. High relief; little or no floodplain development
(5) a. Rocks of medium hardness b. Moderately weathered c. Moderately fractured	(5) a. Medium textured soil b. Occasional rock fragments c. Caliche layers	(5) a. Storms of moderate duration and intensity b. Infrequent convective storms	(5) a. Moderate peak flows per unit area b. Moderate volume of flow per unit area	(10) a. Moderate upland slopes (less than 20%) b. Moderate fan or floodplain development
(0) a. Massive, hard formations	(0) a. High percentage of rock fragments b. Aggregated clays c. High in organic matter	(0) a. Humid climate with rainfall of low intensity b. Precipitation in form of snow c. Arid climate, low intensity storms d. Arid climate; rare convective storms	(0) a. Low peak flows per unit area b. Low volume of runoff per unit area c. Rare runoff events	(0) a. Gentle upland slopes (less than 5%) b. Extensive alluvial plains
Factor value				

GROUND COVER (f)	LAND USE (g)	UPLAND EROSION (h)	CHANNEL EROSION AND SEDIMENT TRANSPORT (i)
(10) Ground cover does not exceed 20% a. Vegetation sparse; little or no litter b. No rock in surface soil	(10) a. More than 50% cultivated b. Almost all of area intensively grazed c. All of area recently burned	(25) a. More than 50% of the area characterized by rill and gully or landslide erosion	(25) a. Eroding banks continuously or at frequent intervals with large depths and long flow duration b. Active headcuts and degradation in tributary channels
(0) Cover not exceeding 40% a. Noticeable litter b. If trees present understory not well developed	(0) a. Less than 25% cultivated b. 50% or less recently logged c. Less than 50% intensively grazed d. Ordinary road and other construction	(10) a. About 25% of the area characterized by rill and gully or landslide erosion b. Wind erosion with deposition in stream channels	(10) a. Moderate flow depths, medium flow duration with occasionally eroding banks or bed
(–10) a. Area completely protected by vegetation, rock fragments, litter b. Little opportunity for rainfall to reach erodible material	(–10) a. No cultivation b. No recent logging c. Low intensity grazing	(0) a. No apparent signs of erosion	(0) a. Wide shallow channels with flat gradients and short flow duration b. Channels in massive rock, large boulders, or well vegetated c. Artificially controlled channels
Factor value			

	Subtotal (a) – (g)	Subtotal (h) – (i)	TOTAL RATING – – – = – – . – ac.ft./sq. mi./yr.

(Instructions on reverse)

Form 7310–16 (July 1971)

GENERAL INSTRUCTIONS

District Office prepares one copy for District file.

SPECIFIC INSTRUCTIONS

(Items not listed are self-explanatory)

Numbers indicate values assigned appropriate characteristics. Letters a, b, c, and d refer to independent characteristics to which full value may be assigned.

Interpolation between the sediment yield levels may be made. High values for columns (a) through (g) should correspond to high values for (h) and (i). If they do not, factors (a) through (g) should be reevaluated. If they do not correspond, then a special erosion condition exists.

Convert *Total Rating* to sediment yield by use of graph.

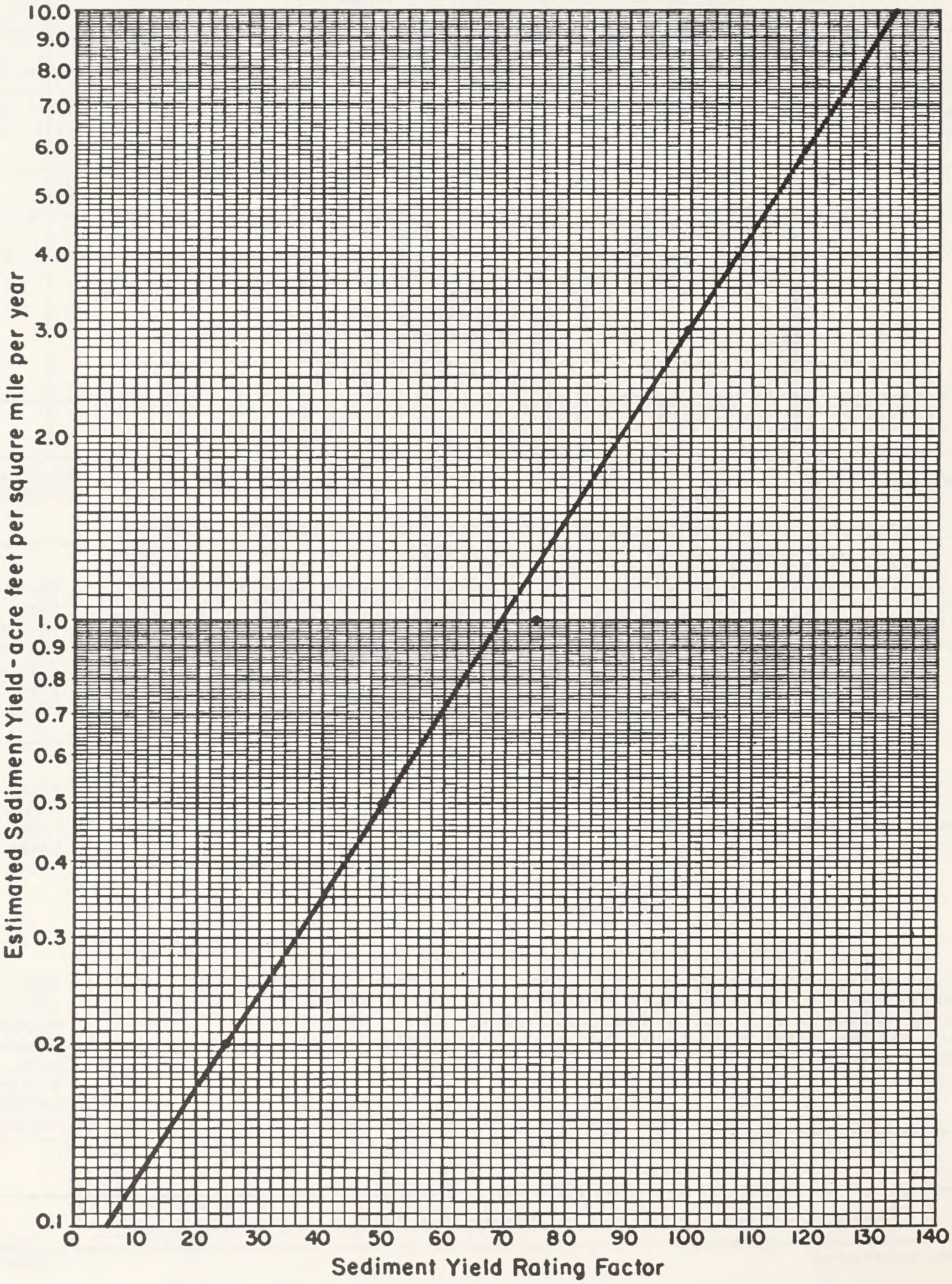


TABLE F-2
Watershed

	Proposed Action				Alternative #1* No Action				Alternative #2 No Livestock Grazing				Alternative =3 Increased Livestock Use				Alternative #4 Minimal Improvements			
	Erosion	Ground Cover	Land Treatment	Overall Watershed Rating	Erosion	Ground Cover	Land Treatment	Overall Watershed Rating	Erosion	Ground Cover	Land Treatment	Overall Watershed Rating	Erosion	Ground Cover	Land Treatment	Overall Watershed Rating	Erosion	Ground Cover	Land Treatment	Overall Watershed Rating
AEC Riverfield	+	+	0	+	0	0	0	0	+	0	0	+	0	0	++	+	+	+	0	+
Big Desert	=	+	+	0	=	+	0	-	+	+	0	+	=	+	++	0	=	+	+	0
Big Butte	0	0	0	0	-	0	0	-	+	+	0	+	-	0	0	-	+	+	++	+
Bowers	0	0	0	0	-	-	0	-	+	0	0	+	-	-	++	0	0	0	0	0
Cedar Butte	+	+	0	+	-	+	0	0	+	+	0	+	-	+	++	+	-	+	0	0
Cinder Cone	+	+	0	+	+	+	0	+	+	+	0	+	-	+	++	+	+	+	0	+
Cox's Well	+	+	0	+	0	0	0	0	+	+	0	+	-	+	++	+	+	+	0	+
East Butte	+	+	0	+	0	0	0	0	+	0	0	+	-	-	++	0	+	+	0	+
Hells Half-Acre	0	0	++	+	0	0	0	0	+	0	0	+	-	0	0	-	0	0	0	0
Houghland	-	0	0	-	-	=	+	-	+	0	0	+	0	0	++	+	-	+	0	0
Huddles Hole	0	0	0	0	0	0	0	0	+	0	0	+	0	0	0	0	0	0	0	0
Judge	-	0	-	-	-	0	0	-	+	0	0	+	-	0	0	-	0	0	0	0
Klempel	0	0	0	0	0	0	0	0	+	0	0	+	-	0	0	-	0	0	0	0
Moonshine	=	+	0	-	=	+	0	-	+	+	0	+	=	+	0	-	-	+	0	0
Mooreland	-	+	0	0	-	+	0	0	+	+	0	+	-	+	0	0	-	+	0	0
Muirbrook	+	0	0	+	-	0	0	-	+	0	0	+	-	0	0	-	0	0	0	0
No. 2 Well	+	+	++	+	0	0	0	0	+	+	0	+	-	0	+	0	+	+	++	+
Quaking Aspen	+	+	++	+	0	0	0	0	+	0	0	+	-	+	++	0	0	+	0	+
Riverfield	-	+	0	0	-	0	0	-	+	0	0	+	=	+	++	0	-	+	0	0
Rock Corral	0	0	0	0	0	0	0	0	+	0	0	+	-	0	0	-	0	0	0	0
Rudeen	0	0	0	0	-	-	0	-	+	-	0	0	-	0	++	0	-	0	++	+
Smith	-	0	++	+	-	0	0	-	+	0	0	+	-	0	++	0	-	0	++	+
Springfield	+	+	++	+	-	0	0	-	+	0	0	+	-	+	++	+	+	+	++	+
Sunset	0	+	++	+	0	0	0	0	+	0	0	+	-	0	++	0	+	+	++	+
Webb	=	-	=	=	-	0	0	-	+	-	0	0	=	+	0	-	-	+	0	0
Alternative +				12				1				23				6				11
Summary -				4				12				0				8				0
0				9				12				2				11				14

Erosion = 0 No change in erosion trend
+ Reduced trend in erosion
- Increased trend in erosion
= Increased trend in runoff and erosion

Ground Cover = 0 less than 2% change in ground cover
+ 2-9% increase in ground cover
- 2-9% decrease in ground cover

Overall Watershed Rating = 0 Static
+ improving condition
- declining condition

Land Treatment = 0 less than 10% of allotment acreage treated
+ 10-19% of allotment acreage treated
++ more than 20% of allotment acreage treated
- 10-19% of allotment acreage treated causing a negative impact
= more than 20% of allotment acreage treated causing a negative impact

*Alternative 1 No Action also represents the existing situation

TABLE G-1

Ecological Sites

Ecological Types	EIS Acres	Percent of EIS area	Corresponding Ecological Sites	Common Species in Climax Communities
Big sagebrush	374,662	62.8	Loamy 8-12"	Wyoming big sagebrush, bluebunch wheatgrass, tapertip hawksbeard
			Shallow stoney 8-12"	Wyoming big sagebrush, bluebunch wheatgrass
			Very shallow stoney 8-12"	Wyoming big sagebrush, bluebunch wheatgrass
			Loamy 12-16"	basin big sagebrush, bluebunch wheatgrass, tapertip hawksbeard
Threetip sagebrush	2,774	.5	Playa	threetip sagebrush, sedge
Black sagebrush	1,663	.3	Shallow stoney 8-12"	black sagebrush, bluebunch wheatgrass
Treated	46,743	8	Variable	crested wheatgrass
Non-productive	54,454	9	Rock outcrop	vegetation non-existent
Riparian	2,238	.4	-	cottonwood, squawbush, Kentucky bluegrass
Fire disturbance	114,398	19	Variable	Areas in various stages of plant succession.
	596,932	100		

TABLE G-2

Trend

Allotment	Downward	Static or non-apparent	Upward	Total
AEC Riverfield		16,054		16,054
Big Desert	18,560	230,223		248,783
Big Butte		44,642		44,642
Bowers		320		320
Carters		1,949		1,949
Cedar Butte		12,622		12,622
Cinder Cone		12,052		12,052
Cox's Well		17,344		17,344
East Butte	172	1,011		1,183
Hells Half-Acre		176		176
Houghland		23,163		23,163
Huddles Hole		352	300	652
Judge		80		80
Katseanes	1,275			1,275
Klempel		320		320
Moonshine		6,384		6,384
Mooreland		7,469		6,469
Muirbrook		120		120
Nipples		3,602		3,602
No. 2 Well	23,896			23,896
Quaking Aspen		70,032		70,032
Riverfield		8,114		8,114
Rock Corral		10,752		10,752
Rudeen		9,553	600	10,153
Smith	20,233			20,233
Springfield	34,546			34,546
State Twin Buttes	1,200			1,200
Sunset		11,021		11,021
Webb	760			760
Whitehead		5,837		5,837
TOTALS	100,642	493,192	900	594,734

TABLE G-3

Condition

	Native Range				Crested Wheatgrass Seeding			
Allotment	Good	Fair	Poor	Dist.*	Good	Fair	Poor	Total
AEC Riverfield	1,826	9,290	4,938					16,054
Big Desert	1,700	117,694	10,834	90,564	7,161	16,189	4,641	248,783
Big Butte	14,605	24,540	2,214	83	91	1,539	749	44,642
Bowers	320							320
Carter		1,940	9					1,149
Cedar Butte	982	9,547		86	697	906	404	12,622
Cinder Cone	5,300	5,439		353			690	12,052
Cox's Well	1,265	12,627		3,452				17,344
East Butte		994		29	172			1,183
Hells Half-Acre		176						176
Houghland	7,239	9,424		5,761	232	395	112	23,163
Huddles Hole	652							652
Judge				80				80
Katseanes			1,275					1,275
Klempel		320						320
Moonshine	1,647	4,737						6,384
Mooreland		5,337	380	1,752				7,469
Muirbrook				120				120
Nipples		3,314	288					3,602
No. 2 Well	2,561	12,410	3,818	2,788	1,614	110	595	23,896
Quaking Aspen	16,979	37,904	9,465	5,308			376	70,032
Riverfield		3,791	3,704			619		8,114
Rock Corral	9,614	12		95		1,031		10,752
Rudeen	10,153							10,153
Smith	19,835	42					356	20,233
Springfield	4,035	19,571		3,966	776	3,360	2,838	34,546
Sunset	5,416	5,605						11,021
Webb			760					760
Whitehead		4,602	1,235					5,837
State Twin Buttes		11	1,189					1,200
TOTALS	104,129	289,327	40,109	114,437	11,564	24,149	11,031	594,734

*Disturbed, mainly from fire

APPENDIX H

Sage Grouse and Pronghorn Antelope Habitat Guidelines

Under current operating criteria, agencies that administer public lands must apply multiple use management concepts in the decision making process. In the event that decisions are made which, after full consideration of all land use values, indicate the desirability of sagebrush control to achieve specific management goals, we recommend adherence to the following guidelines in sage grouse habitat to minimize the detrimental effects of such control on the sage grouse resource.

1. The state wildlife agency should be notified of each specific proposal to control vegetation a minimum of 2 years in advance of treatment by means of an Environmental Assessment. In such situations where it is not possible to provide such notice (i.e., private lands), the state wildlife agency should be notified as soon as the project is proposed. An adequate amount of lead time is necessary to properly evaluate control projects during all seasons of the year.
    - a. The public land management agency will provide the state wildlife agency with detailed maps on which proposed areas to be treated are located and defined along with detailed plans as to the type of treatment and expected results.
    - b. The state wildlife agency will plot sage grouse use areas on the maps furnished them: (1) leks, (2) nesting areas, (3) wintering sites, and (4) meadows and summer range on brooding areas.
    - c. Representatives of the cooperating agencies will meet on the proposed project area for an on-the-ground inspection following completion of the map.
    - d. No sagebrush will be treated or removed until comprehensive multiple-use management plan has been formulated for the area.
    - e. Project plans for sagebrush control will include provisions for long-term quantitive measurement of vegetation before and after control to acquire data on the effects on wildlife habitat, and to ascertain whether the project's objectives were accomplished. The land-management agency involved should bear the responsibility for evaluation of the project as it relates to habitat, while the state wildlife agency should assume the responsibility of measuring the effects of the project on the sage grouse resource.

2. No control work will be considered where live sagebrush cover is less than 20 percent, or on steep (20 percent more gradient) upper slopes with skeletal soils where big sagebrush (A. tridentata) is 30 cm or less in height.

3. The breeding complex (leks and nesting areas) will be considered as all lands within a 3-km radius of an occupied lek (in some situations, depending on the quality of the nesting habitat, this radius may well exceed 3km). Control of vegetation within the breeding complex will not be undertaken within 3km of leks, or on nesting and brood areas.

On-site investigations by land management and state wildlife agency personnel will be essential to determine inviolate areas. Areas to be protected from treatment will be clearly defined on the maps in 1-b above.

4. There will be no control attempted in any area known to have supported important wintering concentrations of sage grouse within the past 10 years (delineated in 1-b).

5. No control will be attempted along streams, meadows or secondary drainages (dry and intermittent). A 100-m strip (minimum) of living sage will be retained on each edge of meadows and drainages. On-site inspections by land management and wildlife agency personnel will be made to assess the desirability of increasing or decreasing the width of untreated strips in specific areas.

6. When sagebrush control is found to be unavoidable in sage grouse range, all treatment measures should be applied in irregular patterns using topography and other ecological considerations to minimize adverse effects to the sage grouse resource. Widths of treated and untreated areas can vary for the convenience of application technique; except, treated areas will not be wider than 30 m and untreated areas will not be treated until food and cover plants in the treated areas attain comparable composition to that of the untreated areas.

7. Where possible, spraying will be done with a helicopter or ground equipment. No spraying will be done when wind velocity exceeds 10 km per hour.

8. Whenever possible, complete kill or removal of sagebrush in treated areas should be avoided. Partial kill or removal of sagebrush may enhance the area for livestock, prevent all loss of snow cover in winter and allow for some use of the disturbed area by sage grouse.

The above guidelines are recommendations designed to minimize damage to populations of sage grouse. If and when exceptions to the above guidelines occur, sound biological judgment should be used. Each individual situation should be carefully investigated with professional analysis and judgment utilized in arriving at final decisions.

It is recognized that many other species of wildlife are dependent upon sagebrush-dominated plant communities and that sagebrush lands have intangible esthetic values. That other values of sagebrush lands are not included in this synopsis, does not imply that they are not important.

Autenrieth, R. ed. 1978. Guidelines for the Management of Pronghorn Antelope. from Proc. 8th Biennial Pronghorn Antelope workshop. Jasper, Alberta, Canada, 1978. pp. 473-525.

The following information is condensed from the above cited publication and contains that material pertinent to this EIS. A complete document is available for inspection or for additional information at the Idaho Falls BLM district office or at the Idaho Fish and Game.

A. The Animal

1. Harrassment

Nearly all traffic in vicinity of antelope constitutes a degree of harrassment. Regular use of established roads produced minimal disturbance. However, recreational use of four-wheel drive, motorcycles, all terrain vehicles, snowmobiles or aircraft on antelope ranges must be minimized, especially during winter months and the fawning season (May 1 to June 15, northern ranges). Closures may be necessary on winter ranges particularly vulnerable to vehicle activity.

B. The Habitat

1. Water

Water distribution appears to affect the distribution of antelope more than any other factor. All types of developments are used by antelope. Fences should be constructed around guzzlers to prevent trampling damage and competition by cattles or horses.

2. Vegetation

a. Range conversions

Range improvements must provide habitat diversity. Pronghorns thrive best on ranges in a sub-climax vegetation condition. Such conditions were historically created by (1) wildfires caused by lightning, and (2) seasonal grazing by herbivores such as bison, elk and deer. Where the vegetation is in a poor ecological condition or one or more of the vegetation characteristics are inadequate for the antelope's habitat requirements, vegetation type conversions may be accomplished to correct the quality components lacking.

(1) Brush control - Brush control is of questionable value for enhancing antelope habitat on much of their range. However, some areas of tall, dominant brush (more than 30 percent canopy cover) may be marginal or low density range for antelope.

- (a) Limit the size of the project to less than 1000 acres (405 ha).
- (b) The project should maintain 5 to 20 percent browse canopy cover.
- (c) Winter ranges and spring fawning areas should not be included in brush control projects.

(2) Plowing and chaining - Plowing with large brushland plows is not preferred in that it often kills native plants, especially highly preferred forbs. Chaining does not kill as much sagebrush and is less damaging to native grasses and forbs.

(3) Spraying - The spray (usually 2-4,D) controls sagebrush without harming native grasses. However, the resulting loss of forbs is detrimental to pronghorn needs. Late spring and summer spraying should not be considered.

(4) Prescribed burning - This practice has several characteristics favorable to improving ranges for antelope. Burning can decrease sagebrush and not seriously harm native grasses and forbs when properly done. Stimulation of plant growth and forb production may be increased. Soil fertility is generally increased by fire.

(5) Seeding - Mixture seedings have proven beneficial, especially when legumes have been planted.

C. Livestock Relations - Grazing Systems

1. Maintain native vegetation where ranges are in good condition.
2. Consider forbs and browse when establishing grazing systems for livestock because they are key species for antelope.
3. Forage will be reserved for a reasonable number of pronghorns.
4. "Prescription grazing" - using livestock to achieve vegetative form or composition objectives - should be practiced in seedings and certain native ranges where high antelope habitat values exist.
5. Efforts should be made to reduce the number of livestock during the spring on those areas most important to pronghorns for fawning.
6. Livestock grazing systems which adversely impact the habitat requirements of antelope must be terminated and alternate grazing procedures instituted to maintain or enhance existing antelope habitat.
7. Livestock fence construction will meet specifications deemed appropriate for antelope movement.
8. Summer water sources should not be made available to livestock on an area used as antelope winter range.
9. Herd or drive livestock in lieu of extensive range fencing.
10. Leave gates open when livestock are moved out of fenced pastures.

D. Specific Problems

1. Industrial development - Not applicable. See Guidelines for more information.
2. Fences

   There should no fencing on pronghorn ranges until a complete evaluation has been made on each site where fencing is proposed. This evaluation should be made jointly State and federal wildlife biologists, range managers and livestock operators. This evaluation should determine the possible effects on pronghorns and the benefit to livestock management. Where fencing is deemed necessary the minimum amount of fence should be used to provide proper land use, livestock management a minimum hinderance to pronghorns.

   Fencing for Cattle - Provide a three-stand fence with the top wire no higher than 97 cm (38 inches) and a barbless bottom wire at least 41 cm (16 inches) above the ground.

Fencing for Sheep - Provide a four-stand fence with the top wire no higher than 81 cm (32 inches) and a barbless bottom wire at least 25 cm (10 inches) above the ground.
Newly Constructed Fence - All newly constructed fence should have white rag flagging tied to the top wire between each post to allow improved visibility of the new hazard. Antelope will have become accustomed to the fence by the time the flagging deteriorates. Gray "camouflage" steel fence posts should be avoided on antelope ranges.

Instruction Memo No. ID-80-30

To : All District Managers
From : State Director
Subject : Sage Grouse Nesting Habitat Maintenance, Enhancement and Protection

Many Step IV URA and Step I MFP recommendations pertaining to protection of sage grouse strutting grounds state, "No sagebrush control will be undertaken within 2 miles of any sage grouse strutting grounds." The purpose for this recommendation is to ensure protection of nesting habitat as:

1. The majority of sage grouse nesting occurs within 2 miles of sage grouse strutting grounds.

2. The majority of all nesting occurs under sagebrush plants from 7 to 31 inches in height with an average of about 16 inches being the most preferred.

This recommendation first appeared in the 1977 Wildlife Society Bulletin, "Guidelines for Maintenance of Sage Grouse" by Clait E. Braun, Tim Britt and Richard O. Wallestad.

In some cases, following this recommendation verbatim may be more detrimental than beneficial to sage grouse. Stands of approximately 30% - 40% sagebrush canopy cover appear to be the most frequently selected for nesting. Therefore, stands in excess of 40% canopy cover should be considered for treatment in some manner to achieve the desired canopy cover. Stands in excess of 70% canopy cover should be treated because they have little value to sage grouse. This was one of the major reasons for changing the shrub data collection worksheet developed at the 1978 Idaho Wildlife Workshop. See Instuction Memo No. ID--77-105, Change 2, for procedures on collecting this data.

In analyzing sage grouse nesting habitat, the best habitat appears to be areas with an average canopy cover of about 30% but having some sites with greater canopy cover and some with less. Those areas of more dense canopy cover are used for escape cover from predation, cold and windy weather, extremely hot weather, snow and rain, and as roosting cover. The more open sagebrush stands generally have a better grass and forb understory and are used for nesting and feeding.

The purpose of developing the worksheet and precedure in I.M. No. ID-77-105, Change 2, was to gather more intensive data to ensure more specific recommendations, rather than broad generalizations such as the one discussed; however, if the sage grouse nesting habitat meets the discussed criteria, then the recommendation is proper.

Where some type of sagebrush manipulation is proposed within sage grouse nesting areas, follow the procedures outlined in Idaho State Office Manual Supplement 6620 which specifies sending to the Director, Idaho Fish and Game Department, a detailed map or aerial photos or both depicting areas of control, no control, and the degree of control at various sites, and asking for suggestions or recommendations which might further enhance the area for sage grouse. Do not write to the local regional office, giving them sections and townships and asking them how we should do the spraying.

TABLE I-1

Visual Resource Management Scenery Class Rating

	Class A Scenery	Class B Scenery	Class C Scenery
Scenery			
Landform	High vertical relief expressed in prominent cliffs, spires, steep canyons (e.g. Big Southern Butte). Massive rock outcroppings, highly detailed features that dominate or are exceptionally striking (e.g. Craters of the Moon lava).	Landscape with major buttes, cinder cones (e.g. East and Middle Butte); canyon lands, interesting erosion patterns, or general landform variety not dominant or exceptionally unique (e.g. Arco Hills).	Common low or rolling hills, undulating lava flows, with few dominant or detailed features (e.g. most older lava flows).
Vegetation	High degree of species and structural diversity (e.g. Snake River riparian zone, or kipuka vegetation within the Wapi lava flow).	Moderately high variety in species or structural diversity (e.g. sagebrush grasslands south of China Cup, juniper stands on Hell's Half-Acre or limber pine on Craters of the Moon).	Low vegetative diversity or contrast on either a micro or macro scale (e.g. middle-aged lava flows).
Water	High water quality. Numerous and changing flow characteristics (falls, rapids, meanders) or a large flow volume (12,000 cfs) where the water dominates the scenery unit (e.g. Henry's Fork of Snake River near Menan).	Relatively good water quality and some diversity in flow characteristics, moderately large volume of (5,000 cfs) water (e.g. Snake River south of Idaho Falls to American Falls Reservoir).	Little or unnoticeable surface water or poor water quality.

Visual Resource Management
Scenery Unit Description

UNIT IDENTITY	RATING	(ACRES) SIZE	VAC	LANDFORM	WATERFORM	VEGETATION	SIGNIFICANT MODIFICATION
Agriculture Zone 1 Unit 009 (SW of Idaho Falls)	Class C	60,000 1% BLM	low	flat to gently rolling, interspersed with eroding drainages	irrigation canals add some variety	dominated by exotic vegetation, remainder sagebrush/grass	agricultural support structures
Agriculture Zone 2 Unit 010 (between Blackfoot and American Falls)	Class C	290,000 1% BLM	low	flat to gently rolling	almost non-existent	dominated by agricultural vegetation	intensive agriculture, some residential
Big Southern Butte (SW of Arco)	Class A	9,600 98% BLM	low med	Large butte with with interesting erosional patterns, steep rock out-crop	non-existent	some variety in canopy cover, good forb and grass diversity	communications and fire detection facilities, road cuts and and some ORV scars.

Unit Identity	Rating	(Acres) Size	Vac	Landform	Waterform	Vegetation	Significant Modifications
Lava Plain Unit 001 (west of Snake River east of Arco)	Class C	1,233,000	low	gradually rolling, smooth texture	non-existent	sagebrush/grassland dominated by sage	INEL site support facilities, communications facilities
Hell's Half-Acre Unit 002 (12 mi. SW of Idaho Falls)	Class B	8800 A. 92% BLM	low med	aa and pahoehoe lava (40,000 years old) very course and detailed, texture, having crevices, reefs, ridges and valleys	not noticeable, small pools in crevices	scattered juniper canopy, good shrub diversity, forbs and grasses present	345 kv power transmission line, agricultural developments in kipukas
Cedar Butte Unit 003 (east of Big Butte	Class C	46,560 92% BLM	med	similar to unit 002 except 70,000 years old, texture is reduced	non-existent	sagebrush dominated with juniper canopy	345 kv power distribution line
Craters of the Moon Unit 004 (SW of Arco)	Class A	73,920 88% BLM		aa and pahoehoe lava, numerous cinder cones, rifts, caves and crevices about 10,000 years old	small pools exist but not noticeable	limber pine canopy, good diversity of shrubs, grasses and forbs	National Park Service headquarters

Unit Identity	Rating	(Acres) Size	Vac	Landform	Waterform	Vegetation	Significant Modifications
Wapi Lavas Unit 005 (NW of American Falls)	Class B	19,440 97% BLM	low	not quite the variety as Craters of the Moon, good detail in lava features	non-existent	different variety in vegetation than Unit 004, dominated by sagebrush, grass and forbs; juniper canopy is common on kipukas	Crystal Ice Caves development
Snake River Zone 1 Unit 006 (south of Blackfoot)	Class A	10,800 2% BLM	high	numerous island penninsulas and other riparian features, unique relative to total Snake River Plain	relatively large volume (12,000 CFS); good water quality; meandering flow patterns	dominated by riparian habitat; cottonwoods provide canopy; variety of shrubs and grasses in understory	major suburban agricultural and industrial impacts
Snake River Zone 2 Unit 007 (south of Idaho Falls)	Class B	14,000 2% BLM	med	similar, but not as diverse as unit 006	same as unit 006	grass-and sagebrush banks more common than unit 006	agricultural support facilities
Reservoir Influence Zone (American Falls)	Class B	33,880 1% BLM	low	relatively flat terrain with eroding banks	about 25,000-acre reservoir with relatively good water quality	small rim of wetland vegetation, remainder dominated by upland sagebrush	agricultural and residental support facilities structure regulating water level in the water

TABLE I-2

Visitor Use Estimates and Projections[1]

Activity	1980 Visits	1980 Visitor Days	Percent Increase	1990 Visitor Days
A. Hunting				
1. waterfowl[2]	13,725	6,862	10%	7,548
2. pheasants[2]	13,000	8,588	10%	9,447
3. coyotes[3]	9,750	6,532	15%	7,512
4. rabbits	4,615	3,077	3%	3,170
5. dove	4,446	2,960	10%	2,256
6. sagegrouse	3,431	2,287	10%	3,256
7. partridge	2,525	1,682	10%	2,516
8. northern species	2,340	1,559	15%	1,793
9. antelope and deer	975	650	50%	975
B. Fishing[2]				
1. Snake River	15,000	7,350	40%	10,290
2. American Falls	20,000	10,037	30%	13,048
C. Camping[2]				
1. (entire area)	600	700	20%	840
D. ORV Use				
1. motorcycle	3,000	990	20%	1,188
2. snowmobile	2,000	660	20%	792
3. four-wheel drive	1,800	630	10%	693
E. Other Recreation[2] (hiking, wildlife, observation, etc.)	1,000	250	20%	300

[1] Estimates Based on
a. Idaho SCORP, b. Idaho Fish and Game Studies and Estimation,
c. BLM employee estimates

[2] The proposed action would not affect these activities

[3] There is a direct correlation between the price of fur and the number of hunter days

Note: The number of hunter (visitor days) is controlled by the number of permits issued by Idaho Fish and Game. Assume 100% increase in game population.

Cultural Resources Background and Methodology

Density, diversity, distribution and condition of cultural resources in the EIS area were determined by a combination of inventory techniques. These included a literature search, an examination of Idaho Falls District and State Historic Preservation Office (SHPO) files to determine the location and type of sites previously recorded (Class I Inventory) and a stratified, random sample of 10 percent of 60,000 acres of public land in the EIS area (Class II inventory.) About 15,000 acres were inventoried. Four environmental zones (buttes, playas, kipukas and parks) were used for strata. Ninety-eight prehistoric and historic sites were discovered. Although funds dictated a less than ideal sample size, the Class II inventory did provide some useful and basic data on which to develop management recommendations and plans. Information gathered through all inventories is summarized below.

The EIS area was occupied by prehistoric, human populations for at least 10,000 years. The first people in the area made stone tools and projectile points associated with hunting large game animals (bison, elephant, camel). The Big Game Hunting Tradition was replaced about 8,000 years ago by people who made smaller projectile points and may have exploited a wider variety of plant and animal resources. This Archaic Tradition is divided into early and late periods. Late Archaic (1200-1850 AD) is distinguished by small side-notch points, introduction of pottery and (by 1700 AD) acquisition of horses. Historically, the EIS area is included in the Northern Shoshone and Bannocks territory until the Ft. Hall Indian Reservation was established in the late 1800s.

The first Euro-American explorer arrived in the area in 1811. Wilson Price Hunt led a trapping-exploring party across the Snake River Plain to Astoria, Oregon. Trappers began to visit the northern edge of the area in the 1820s. In 1833 Captain B. L. Bonneville camped at Big Southern Butte during his expedition into the Great Basin. In 1862, Indian raids diverted Oregon Trail emigrants northwest past the area's buttes, lost rivers and lava flows. This route was called Goodale's Cutoff, and was also used as the stagecoach and freight wagon road between Blackfoot and Lost River (Arco). This road was an essential link between the mines of central Idaho and the railroads and agricultural areas of southeastern Idaho. Stage service began in 1879 and continued until the Salmon River Railroad was built from Blackfoot to Mackay in 1900. The first irrigation ditches were dug in the 1880s. Farms and ranches soon spread into the area. During the same period, cattle, sheep and horses were driven across the desert to railheads in Blackfoot and Idaho Falls. Trail drives continued until 1905. During the 1900s, homesteads were built throughout the area. Most were soon abandoned because of their isolation, the harsh climate, or a lack of water. Other historical uses of the area include brewing illegal moonshine whiskey in lava caves, strafing and bombing lava flows, shelling Big Southern Butte with 16-inch naval guns, and testing nuclear reactors (EBR-1, first one in the world to generate electricity, 1951).

Prehistoric sites in the unit represent seasonal use and occupation (spring and summer). Artifacts from the sites relate to hunting, butchering and hide processing. Sites are often found in areas favorable for observing and ambushing large game animals. However, pottery found at some sites may indicate that plants were also collected and processed. Sites found in the unit include temporary campsites, tool making sites, rockshelters, caves, rock structures and lithic material sources.

Historic sites are related to exploration and settlement of the American West and to development of a regional economy based on ranching, farming and mining. Sites include emigrant trails and landmarks, stage and freight wagon roads, stagecoach stations (ruins), railroad construction camps, log cabins, sheep camp sites, homesteads and rock structures.

Unauthorized surface collecting and vandalism are the most serious threats to cultural resource sites in the unit. Forty-five sites have been damaged by these agents of deterioration. Sites are also being damaged by livestock and related erosion (35), road maintenance, off-road-vehicles, natural weathering and decay, mineral exploration and unauthorized refuse dumping.

At the present time, little professional archaeological research has taken place within the unit. Relative significance of individual cultural resource sites can be determined only after the sites have been evaluated. Several sites in the unit show research potential and should eventually be nominated to the National Register of Historic Places. Some will be nominated as individual sites, others as archaeological or historic districts.

APPENDIX J

Economics

Ranch Budgets

An interagency agreement between the Bureau of Land Management, U.S. Forest Service, and the Economics, Statistics and Cooperative Service (ESCS) was signed in November of 1979. This agreement provides for the ESCS to collect rancher economic data that the other two agencies can use in their planning, EIS work, and range management program documents. Basically, the agreement provides the ESCS with money to collect ranch budgets for the BLM and Forest Service.

The first step in implementing the agreement was to identify those areas to be studied by ESCS. This is done annually. The Big Desert area was the third area in Idaho to receive a complete analysis under the terms of the agreement. The first step in collecting the Big Desert budgets was to provide ESCS with some basic data about the ranching industry in the Big Desert planning area. This included data such as the names of the operators involved, herd sizes, class of livestock, season of use, county of residence, active grazing preference on BLM lands, use of other federal lands, and other feed sources. Preliminary budgets were then constructed. These budgets were developed from national survey data, data provided about the local ranching industry, data from other sources such as extension specialists, lending institutions, universities, or producer organizations. These preliminary budgets were then circulated for review to the BLM and a sampling of producers in the area. This was done by holding two meetings, one September 23, 1980, in Burley and one September 24, 1980, in Arco. In addition, the budgets were mailed to permittees for their comment. Input gathered was used to develop the final budgets. The final budgets were distributed to all producers in the planning area and the BLM. These final budgets are shown in Tables J-1 thru J-6.

Linear Programming

Linear programming is a computational method to determine the best plan or course of action when there are many alternatives for the plan, a specific or numerical objective exists, and the means for attaining it are limited. Linear programming maximizes or minimizes some objective function. The linear programming analysis for this EIS was done by ESCS. The basic input data came from the ranch budgets. The linear programming for this EIS maximized net rancher income with availability of AUMs from BLM lands the primary limiting factor.

Dynamic Regional Analysis Model

Direct impacts (such as changes to ranch income and changes in the construction industry) cause other impacts to occur. For instance, when ranchers have less income, they purchase fewer goods and services in town, thus lowering the merchant's income. This is called the secondary impact.

In order to analyze these impacts, a computer model is used, which estimates these impacts. It is called the Dynamic Regional Analysis Model (DYRAM). The direct income impacts are entered and the model calculates direct employment and secondary income and employment impacts. The model uses industry earnings in combination with a 20-sector industry expected transaction matrix compiled from the national input-output table in order to estimate net exports or imports by industry for the economy of a given area. Multipliers are computed; they refer to impacts on personal income, not business income. Multipliers are the ratio between the ultimate increase of income arising from an increment of investment and the initial new investment itself. For example, an initial income increase in the livestock industry creates additional (or secondary) increases in both the livestock and other sectors of the economy. A multiplier estimates what this addition would be. With initial income increased by $1,000 and a multiplier of 1.5, the total income increase would be $1,500, with $500 being the additional increase estimated by the multiplier. The detailed mathematical explanation of DYRAM may be found in the Annals of Regional Science, November 1975, pp. 44-50.

Discounting

Since each alternative represents differing mixes of livestock use and construction activities, it was decided to determine the net present worth for each alternative. Present worth is the amount of money today which will become a given amount at a stated time in the future. For example, at 10 percent interest $100 will grow to $110 in one year; therefore, the present worth of $110 one year from now at 10 percent interest is $100. If the end product is a series of payments, the present worth is the amount that will result in the sum of the series. The net present worth of each alternative then, is the sum of the present worths of the income streams associated with livestock, construction, etc. Discounting is the procedure whereby the present worth of future income is determined. The concept is the converse of growth in value due to accrued interest. The proposed action and the alternatives have been discounted to reflect their present worth with an assumed interest rate of 7.375 percent (established by the Water Resources Council for use by federal agencies in FY 1981). Table J-7 shows the discounting procedure for the income change in the proposed action.

Recreation Income

The recreation income impacts were calculated by combining data on changes in hunter days (from the recreation section) with data on the value of a hunter day. The income impact (value) of a hunter day came from the U.S. Forest Service's Draft Alternative Program Directions, 1981-2030, 1979. Table J-8 illustrates the procedure used.

Adjusting for Inflation

When comparing income earned in various years, the effect of inflation must be taken into account. In order to do this, one or both of the income figures must be inflated or deflated to a common year. In this EIS comparisons were made by inflating the 1974 income figures to 1978 levels. This is done by using the consumer price index. This index measures the relative level of prices against some base year which is presently 1967. In 1978, the index stood at 195.4. In 1974, the index was 147.7. This means that prices rose roughly 32 percent (195.4 - 147.7) between 1974 and 1978. In order to make 1974 prices equivalent to 1978 prices they must be increased by 32 percent. Any difference between the two prices not accounted for by this process would be the actual growth (or decline) in the economy over that period of time. Table J-9 shows how this was done.

Range Improvements and Maintenance

In order to determine the impact on the local economy of installing and maintaining range improvements, the amount expected to be spent in the local economy must be determined. First, the total cost of each type of range improvement had to be determined. Once this was done the total cost had to be broken down into labor and materials costs. Then it had to be determined how much of these various costs would be icreased locally. This was done by district personnel, with knowledge of range improvement construction and past purchasing patterns, making estimates of how these costs would be distributed. These resulted in a set of assumptions which are displayed in Table J-10.

TABLE J-1

Idaho, Big Desert EIS Area, Cattle Enterprise - Less than 300 Head, Spring Grazing

Unit	Number	Average Weight	Price Cwt	Total Value
Sales:				
Steer calves	34	390	69.15	9,169
Heifer calves	17	355	56.25	3,395
Yearling steers	19	750	64.63	9,210
Yearling heifers	9	695	55.17	3,451
Cull cows	20	976	28.84	5,630
Total				30,855
Total/cow				226.88

	Total Value	Value/Cow
Cash Costs:		
BLM grazing fee	480	3.53
Forest grazing fee	--	--
Other range lease/rent	1,560	11.47
Hay produced	6,187	45.49
Hay purchased	1,155	8.49
State lease	833	6.13
Silt and mineral	205	1.51
Concentrate feeds	--	--
Veterinary and medicine	313	2.30
Hired trucking	197	1.45
Marketing	377	2.77
Fuel and lubricants	2,545	18.71
Repairs	1,912	14.06
Land taxes	1,174	8.63
Other taxes	499	3.67
Insurance	831	6.11
Interest on operating capital	1,127	8.29
General farm overhead	1,715	12.61
Other cash costs	--	--
Hired labor	1,080	7.94
Total cash costs	22,190	163.16
Other costs:		
Family labor	4,317	31.74
Depreciation	6,010	44.19
Interest on investment other than land	12,323	90.61
Interest on land	5,627	41.37
Total other costs	28,277	207.92
Total all costs	50,467	371.08
Return above cash costs	8,665	63.71
Return above cash costs and family labor	4,348	31.97
Return to total investment	-1,662	-12.22
Return to land	-13,985	-102.83

Production Assumptions - herd size 136 head: 81% calf crop: 4% calf death loss to weaning; 25 cows per bull; 20% replacement rate; 5% cow loss.

TABLE J-2

Idaho, Big Desert EIS Area, Cattle Enterprise - 300 head and over, Spring Grazing

Item	Unit	Number	Average Weight	Price Cwt	Total Value
Sales:					
Steer calves		144	385	69.15	38,337
Heifer calves		66	350	56.25	12,994
Yearling steers		78	735	64.63	37,052
Yearling heifers		35	680	55.17	13,130
Cull cows		92	976	28.84	25,896
Total					127,409
Total/cow					209.55

Cash costs	Total Value	Value/ Cow
BLM grazing Fee	1,368	2.25
Forest grazing fee	--	--
Private range lease/rent	6,955	11.44
State lease	22,628	37.22
Hay	16,553	27.23
Protein supplement	3,778	6.21
Irrigated pasture	--	--
Salt and mineral	936	154
Concentrate feeds	1,715	2.82
Veterinary and medicine	626	1.03
Hired trucking	1,484	2.44
Marketing	8,263	13.59
Fuel and lubricants	5,898	9.70
Repairs	6,220	10.23
Taxes other than land	821	1.35
Insurance	5,521	9.08
Interest on operating capital	5,243	8.62
General farm overhead	6,457	10.62
Land taxes	--	--
Hired labor	3,526	5.80
Total cash costs	103,130	169.62
Other costs:		
Family labor	14,106	23.20
Depreciation	19,739	32.47
Interest on investment Other than land	50,788	83.53
Interest on land	91,686	150.80
Total other costs	176,319	290.00
Total all costs	279,449	459.62
Return above cash costs	24,270	39.93
Return above cash costs and family labor	10,173	16.73
Return to total investment	-9,566	-15.74
Return to land	-60,354	-99.27

Production assumptions; Herd size 608 head; 77% calf crop; 5% calf death loss to weaning; 20 cows per bull; 20% replacement rate; 5% cow loss.

TABLE J-3

Idaho, Big Desert EIS Area, Cattle Enterprise - Sp-S-F Grazing less than 10% Dependency

Steer calves	Unit	Number	Average Weight	Price Cwt	Total Value
Sales:					
Steer calves		36	390	69.15	9,709
Heifer calves		18	355	56.25	3,594
Yearling steers		20	750	64.63	9,695
Yearling heifers		9	695	55.17	3,451
Cull cows		22	976	28.84	6,193
Total					32,642
Total/cow					226.68

Cash costs	Total Value	Value/ Cow
BLM grazing fee	155	1.08
Forest grazing fee	--	--
Private range lease/rent	1,547	10.74
State lease	7,402	51.40
Hay	1,395	9.69
Protein supplement	863	5.99
Irrigated pasture	--	--
Salt and mineral	218	1.51
Concentrate feeds	330	2.29
Veterinary and medicine	209	1.45
Hired trucking	275	1.91
Marketing	2,694	18.71
Fuel and lubricants	2,025	14.06
Repairs	1,243	8.63
Taxes other than land	528	3.67
Insurance	880	6.11
Interest on operating capital	-- 1,216	-- 8.44
General farm overhead	1,816	12.61
Land taxes	--	--
Hired labor	1,143	7.94
Total cash costs	23,939	166.24
Other costs:		
Family labor	4,571	31.74
Depreciation	6,364	44.19
Interest on investment	--	--
Other than land	13,047	90.60
Interest on land	25,364	175.14
Total cash costs	49,346	342.67
Total all costs	73,285	508.92
Return above cash costs	8,703	60.44
Return above cash costs and family labor	-- 4,132	-- 28.69
Return to total investment	-2,232	-15.50
Return to land	-15,279	-106.10

Production assumptions - Herd size 144 head; 81% calf crop; 4% calf death loss to weaning; 25 cows per bull; 20% replacement rate; 5% cow loss.

TABLE J-4

Idaho, Big Desert EIS Area, Cattle Enterprise - Sp-S-F Grazing over 10% Dependency

Item	Unit	Number	Average Weight	Price Cwt	Total Value
Sales:					
Steer calves		97	385	69.15	25,824
Heifer calves		45	350	56.25	8,859
Yearling steers		52	735	64.63	24,702
Yearling heifers		25	680	55.17	9,379
Cull cows		59	976	28.84	16,607
Total					85,301
Total/cow					217.23
Cash costs			Total Value	Value/Cow	
BLM grazing fee			2,771	7.05	
Forest grazing fee			--	--	
Other range lease/rent			3,809	9.69	
Hay produced			15,368	39.10	
Hay purchased			6,392	16.26	
State lease			2,125	5.41	
Silt and mineral			605	1.54	
Concentrate feeds			3,321	8.45	
Veterinary and medicine			1,108	2.82	
Hired trucking			405	1.03	
Marketing			678	1.73	
Fuel lubricants			5,341	13.59	
Repairs			3,812	9.70	
Land taxes			4,020	10.23	
Other taxes			531	1.35	
Insurance			3,568	9.08	
Interest on operating capital			3,226	8.21	
General farm overhead			4,174	10.62	
Other cash costs			--	--	
Hired labor			2,279	5.80	
Total cash costs			63,533	161.66	
Other costs:					
Family labor			9,118	23.20	
Depreciation			12,759	32.47	
Interest on investment Other than land			32,405	82.46	
Interest on land			46,430	118.14	
Total other costs			100,712	256.26	
Total all costs			164,245	417.91	
Return above cash costs			21,838	55.57	
Return above cash costs and family labor			12,720	32.37	
Return to total investment			-39	-.10	
Return to land			-32,444	-82.55	

Production assumptions - herd size 393 head: 79% calf crop; 4% calf death loss to weaning: cows per bull; 20% replacement rate; 5% cow loss.

TABLE J-5

Idaho, Big Desert EIS Area, Sheep Enterprise - Less than 5,000 Ewes

	Unit	Quantity	Average Weight	Price	Total Value
Slaughter lambs	Head	2,125	105	56.83	126,802
Feeder lambs	Head	708	35	61.17	36,812
Ewes	Head	459	100	9.68	4,443
Wool	lbs.	3,654	10.6	.78	30,211
Wool Incentive	Dol.	30,211	--	.48	14,501
Unshorn Lamb Payment	Cwt	2,833	--	1.43	4,051
Total					216,820
Total/Ewe					61.32

Cash Costs	Total Value	Value/Ewe
BLM permit	1,319	.37
Forest permit	2,280	.64
Irrigated pasture	--	--
Pasture rent/lease	2,938	.83
State lease	3,434	.97
Hay (produce)	26,329	7.45
Hay (produce)	14,965	4.23
Sheep pellets	2,086	.59
Other feed	424	.12
Salts and minerals	636	.18
Spray and dipping	424	.12
and medicine	435	.12
Marketing	735	.21
Trucking	4,310	1.22
Shearing and tagging	5,902	1.67
Legal acct.	1,333	.38
Wool Storage	166	.05
Predator control	3,586	1.01
Ram death loss	1,376	.39
Machine fuel and lube	2,436	.69
Machine repair	2,196	.62
Equipment fuel and lube	99	.03
Equipment repair, hired labor	29,328	8.29
Land tax	6,114	1.73
Other tax	424	.12
Insurance	1,945	.55
General farm overhead	3,794	1.07
Interest on operating capital	6,492	1.84
Total	127,829	36.15

Other costs:	Total Value	Value/Ewe
Family labor	12,567	3.55
Depreciation	13,152	3.72
Interest on Investment other than land	30,793	8.71
Interest on Land Investment	78,589	22.23
Total	135,101	38.21
Total all costs	262,930	74.36
Return above cash costs	88,991	25.17
Return above cash costs and family labor	76,424	21.61
Return to total investment	63,272	17.89
Return to land	32,479	9.19

Production assumption; herd size 3,536 ewes; 110% docking rate; 9% lamb loss docking to market; 20% replacement rate; 25% of lambs sold as feeders; 7% ewe loss; 10.6 lb. fleece weight; 30 ewes per ram.

TABLE J-6

Idaho Big Desert EIS Area, Sheep Enterprise - 5,000 Ewes and Over

	Unit	Quantity	Average Weight	Price	Total Value
Slaughter lambs	Head	3,322	105	56.83	198,229
Feeder lambs	Head	1,107	85	61.17	57,558
Ewes	Head	770	100	9.68	7,454
Wool	lbs	6,633	10.6	.78	54,842
Wool Incentive Payment	Dol.	54,842	--	.48	26,324
Unshorn lamb payment	Cwt.	4,429	--	1.43	6,333
Total					350,740
Total/Ewe					54.64

Cash Costs	Total Value	Value/Ewe
BLM permit	2,392	.37
Forest permit	4,129	.64
Irrigated pasture	--	--
Pasture rent/lease	5,337	.83
State lease	6,503	1.01
Hay (produce)	45,539	7.09
Hay (purchase)	25,840	4.03
Sheep pellets	4,038	.63
Other feed	914	.14
Salts and minerals	1,110	.17
Spray and dipping	757	.12
Vet. and medicine	790	.12
Marketing	1,335	.21
Trucking	7,825	1.22
Shearing and tagging	10,713	1.67
Legal acct.	2,439	.38
Wool storage	302	.05
Predator control	6,547	1.02
Ram death loss	2,818	.44
Machine fuel and lube	4,423	.69
Machine repair	3,986	.62
Equipment fuel and lube	180	.03
Equipment repair	4,217	.66
Hired labor	58,001	9.04
Land tax	11,105	1.73
Other tax	770	.12
Insurance	3,530	.55
General farm overhead	8,088	1.26
Interest on operating capital	11,920	1.86
Total	235,548	36.70

Other costs:	Total Value	Value/Ewe
Family labor	18,000	2.80
Depreciation	23,875	3.72
Interest on investment other than land	55,899	8.71
Interest on land investment	143,447	22.35
Total	241,221	37.58
Total all costs	476,769	74.28
Return above cash costs	115,192	17.94
Return above cash costs and family labor	97,192	15.14
Return to total investment	73,317	11.42
Return to land	17,418	2.71

Production assumptions-herd size 6,419 ewes; 100% docking rate; 11% lamb loss docking to market; 20% replacement rate; 25% of lambs sold as feders; 8% ewe loss, 10.6 lb. fleece weight; 30 ewes per ram.

TABLE J-7

Discounting Procedures
Proposed Action

Year	Cash Flow	Discounting Factor	Present Worth
1	+$ 202,934	.9313	+$ 188,992
2	+$ 206,208	.8674	+$ 178,844
3	+$ 209,482	.8078	+$ 169,220
4	+$ 212,756	.7523	+$ 160,056
5	+$ 216,030	.7006	+$ 151,351
6	+$ 91,430	.6525	+$ 59,658
7	+$ 91,430	.6077	+$ 55,562
8	+$ 91,430	.5659	+$ 51,740
9	+$ 91,430	.5271	+$ 48,193
10	+$ 91,430	.4909	+$ 44,883
11	+$ 30,235	.4572	+$ 13,823
12	+$ 30,235	.4258	+$ 12,874
13	+$ 30,235	.3965	+$ 11,988
14	+$ 30,235	.3693	+$ 11,166
15	+$ 30,235	.3439	+$ 10,398
16	-$ 39,101	.3203	+$ 12,524
17	-$ 39,101	.2983	-$ 11,664
18	-$ 39,101	.2778	-$ 10,862
19	-$ 39,101	.2587	-$ 10,115
20	-$ 39,101	.2401	-$ 9,423
TOTALS	+$1,460,230	--	+$1,114,160

TABLE J-8

Recreation Income Changes
Proposed Action

Type	Hunter Days[1]	Percent Change[1]	Change in Hunter Days[2]	Income Per Day[3]	Change in Income
Big Game	650	+50%	+325	$10.50	+$ 3,413
Upland Game	2,287	+10%	+229	$ 8.00	+$ 1,832
Total	2,937	--	+554	--	+$ 5,245

[1] From Recreation Section and Recreation Appendix

[2] By the end of 20 years

[3] From: Draft Alternative Program Directions, 1981-2030, U.S. Forest Service, 1979.

TABLE J-9

Adjusting For Inflation

Category	Actual 1974 Income	CPI adjustment Factor[1]	Adjusted 1974 Income[2]	Actual 1978 Income	Real Change
Total	$225,532	1.32295	$298,379	$354,370	+$ 55,991
Farm	$ 94,193	1.32295	$124,617	$ 54,468	-$ 70,149
Nonfarm	$131,339	1.32295	$173,762	$299,902	+$126,140
Private	$ 92,308	1.32295	$122,123	$245,092	+$122,969
Government	$ 39,031	1.32295	$ 51,638	$ 54,810	+$ 3,172

[1] From the Consumer Price Index, Table B-49, Presidents Council of Economic Advisors, Economic Report of the President, January 1980

[2] Adjusted to 1978 equivalents

TABLE J-10

Range Improvements and Maintenance Assumptions
Proposed Action

	Wells	Pipelines	Troughs	Reservoirs	Storage Tanks	Fences	Cattlegaurds	Roads	Sagebrush Control	Sagebrush Control Seeding	Seeding
Total Cost Unit	$35,000	$5,000	$1,000	$8,000	$6,000	$2,600	$3,500	$4,500	$ 7	$20	$14
Total	$315,000	$185,000	$30,000	$24,000	$102,000	$208,000	$45,500	$85,500	$493,500	$204,000	$109,200
Labor											
Percent of Total	80	30	50	95	25	50	25	50	25	25	25
Total Labor	$252,000	$ 55,500	$15,000	$22,800	$ 25,500	$104,000	$11,375	$42,750	$123,375	$51,000	$ 27,300
Percent Spent Local	30	30	30	30	30	30	30	30	30	30	30
Total Spent Local	$ 75,600	$ 16,650	$ 4,500	$ 6,840	$ 7,650	$ 31,200	$ 3,413	$12,825	$ 37,013	15,300	$ 8,190
Materials											
Percent of Total	20	70	50	5	75	50	75	50	75	75	75
Total Materials	$ 63,000	$129,500	$15,000	$ 1,200	$ 76,500	$104,000	$34,125	$42,750	$370,125	$153,000	$81,900
Percent Spent Local	10	10	10	10	10	10	10	10	10	10	10
Total Spent Local	$ 6,300	$ 12,950	$ 1,500	$ 120	$ 7,650	$ 10,400	$ 3,413	$ 4,274	$ 37,013	$ 15,300	$ 8,190
Total Spent Locally											
Labor	$ 75,600	$ 16,650	$ 4,500	$ 6,840	$ 7,650	$ 31,200	$ 3,413	$12,825	$ 37,013	$ 15,300	$ 8,190
Materials	$ 6,300	$ 12,950	$ 1,500	$ 120	$ 7,650	$ 10,400	$ 3,413	$ 4,275	$ 37,013	$ 15,300	$ 8,190
Total	$ 81,900	$ 29,600	$ 6,000	$ 6,960	$ 15,300	$ 41,600	$ 6,826	$17,100	$ 79,026	$ 30,600	$16,380
Maintenance											
Annual Costs Unit	$900	$200	$50	$80	$ 50	$80	$ 50	$100	$ 0	$ 0	$ 0
Total	$ 8,100	$ 7,400	$ 1,500	$ 240	$ 850	$ 6,400	$ 650	$ 1,900	$ 0	$ 0	$ 0
Percent Spent Local	60	60	60	60	60	60	60	60	60	60	60
Total Spent Local	$ 4,860	$ 4,440	$ 900	$ 144	$ 510	$ 3,840	$ 390	$ 1,140	$ 0	$ 0	$ 0

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LIST OF PREPARERS

In compliance with the Council on Environmental Quality Rules and Regulations (1502.17), this list states the responsibilities of persons involved in the Big Desert EIS and summarizes their experience and qualifications.

Paul S. Card wrote the section on social conditions. He joined BLM as sociologist in 1979 after 2 years in the Executive Office of the Governor (Idaho). Earlier, during 5 years with the Idaho Transportation Department, Card supervised the production of EISs. He is a graduate of Eastern Washington State College, where he received a B.A. in sociology and math. He attended graduate school at University of Idaho.

Gary Carson, who served as State Office coordinator for the Big Desert EIS, has been with the BLM for 17 years, most of them spent as a range conservationist. He has a B.S. in range management from Utah State University and is now an enviromental coordinator at BLM's State office in Boise. Carson has had a part in six grazing EISs before this one.

Julia Corbett edited all parts of the EIS and coordinated the graphics. She received a B.A. from Indiana University in magazine photojournalism and environmental studies. Before coming to the Idaho Falls District as writer-editor, Corbett worked as a naturalist-writer for the National Park Service in Washington and as a freelance writer-photographer.

Jerald Farringer handled the aquatic wildlife portion of the EIS. He holds a B.S. in biology from Winona State College and an M.S. in aquatic biology from the University of Wisconsin. Farringer has worked 2 years with the U.S. Fish and Wildife Service, 2 years with Water and Power Resources Service, and 3 years with the BLM. He recently transferred from the Idaho Falls District to Salt Lake City.

Stanley C. Frazier authored the sections on economics. A graduate of Oregon State University with a B.S. in agricultural economics, he has been an economist with the Bureau for 5 years and has contributed to seven EISs. Frazier now works in the BLM State office in Boise; he previously worked in the Rawlins (Wyoming) District.

Richard D. Hill prepared the cultural resources portion. He has a B.A. in anthropology from Indiana University and is a candidate for an M.A. in anthropology from Idaho State University. Hill has been with the BLM 5 years and helped prepare the Little Lost-Birch Creek Grazing EIS.

Harold E. Isaacson was responsible for quality control. Isaacson is now assistant district manager in Idaho Falls and has served as a district manager 7 years, assistant district manager 2 years, and environmental coordinator 3 years. He has been with the BLM 25 years. Isaacson has both a B.S. and M.S. in range management.

Brent D. Jensen, Big Butte area manager, was responsible for the MFP multiple use recommendations from which the proposed action evolved. Jensen has a B.S. in range management from Utah State University. He began his career with BLM as a temporary summer employee in Cedar City, Utah. Since then he has served the BLM in Las Vegas and has been an area manager in the San Miguel and Gunnison Basin areas in Montrose, Colorado. He was the Montrose District range management specialist in Montrose before coming to Idaho Falls in 1978.

Darwin Jeppesen wrote the sections on soils and watershed. He holds a B.S. in soils and plant science from Utah State University. Jeppesen worked for the Soil Conservation Service 9 years and began with the BLM in 1975. He is now the soil scientist and watershed specialist for the Idaho Falls District.

John Lloyd prepared the recreation and visual resources sections. Lloyd has a B.S. in business administration and a B.S. in outdoor recreation. He has been with the BLM 8 years with experience in Yuma, Medford and Idaho Falls. Lloyd has helped prepare two grazing EISs.

Richard Maggio prepared the vegetation and livestock grazing portions. He is a range conservationist in the Idaho Falls District and earned a B.S. from Humboldt State University in wildlife management with an emphasis in range management. He has been with the BLM 3 years.

Russell W. McFarling wrote the terrestrial wildlife section of this EIS. He also prepared wildlife portions of the Uncomphagre Basin Grazing EIS and Central Colorado Coal EIS. McFarling has a B.S. degree from Colorado State University. In addition to his 6 years as a district biologist with the BLM, he has worked for the U.S. Forest Service and U.S. Fish and Wildlife Service.

Donald Watson helped prepare some sections of this EIS and filled in as team leader during part of the process. Watson has prepared sections of two grazing EISs and a powerline EIS. He has a B.S. in botany, an M.S. in taxonomy and range management, and an M.A. in resource economics. Watson began with BLM in 1962 in Bakersfield, California, as a range conservationist and has served as area manager, realty specialist, and state office lands specialist and planning coordinator. He now heads up the planning and environmental coordination staff in the Idaho Falls District.

Roger Wickstrom was team leader for this EIS. Wickstrom earned a B.S. in range management in 1967, an M.S. in agronomy in 1970, and an M.S. in urban and regional planning in 1978. He helped prepare the Little Lost-Birch Creek Grazing EIS. Wickstrom directed preparation of this EIS and prepared several sections. Wickstrom has been with the BLM 13 years, with experience in Oregon and Idaho.

GLOSSARY

acre-foot. The volume measurement of water that would cover one acre to a depth of one foot.

animal unit month (AUM). The amount of forage required to sustain the equivalent of 1 cow, 5 sheep, 4 deer or 5.3 antelope for one month.

carrying capacity. The maximum stocking rate possible without damaging vegetation or related resources. It may vary from year to year on the same area because of fluctuating forage production.

climax. The highest ecological development of a plant community capable of perpetuation under prevailing climatic and soil conditions.

crucial habitat. Habitat where animals of a given species tend to concentrate, where the size and habitat quality of a crucial area can be a major factor on the size of a given population.

custodial management. A comparatively low level of management that includes no range improvements or other investments, yet is designed to maintain existing levels of forage, soil and watershed conditions, or other resources.

dynamic regional analysis model (DYRAM). A computer model used to calculate secondary economic impacts. The model computes multipliers for particular industries, so that a change in income in one sector can be traced into other sectors of a regional economy. For a technical description of model, see Annals of Regional Science (Nov. 1975), pp. 44-50.

edge effect. Where two habitat types come together. The edge between the two types will be more favorable as wildlife habitat than either type considered alone.

grazing preference. The total number of animal unit months of livestock grazing on public lands apportioned and attached to base property owned or controlled by a permittee or lessee.

Instant Study Area. One of 55 primitive and natural areas formally identified by the BLM in a final action published in the Federal Register before Nov. 1, 1975. The Federal Land Policy and Management Act requires an accelerated wilderness review of these areas.

loess. Fine-grained material that has been deposited by wind. (Also referred to as wind-blown soil.)

MFP. A Management Framework Plan is the BLM's land use plan. MFP Step 1 consists of sets of recommendations designed to maximize a single resource. MFP Step 2 considers conflicts in use and social, economic and environmental impacts in sets of recommendations by resource for overall multiple use management. MFP Step 3, which considers all comments and experience gained through the EIS process, includes land use decisions for future multiple use management.

Order 2 soil survey. A medium intensity or scale of soil mapping. Soils are delineated on aerial photos into areas known as soil mapping units. Units in an Order 2 soil survey are 10 acres or larger and are in groups based on slope: 0-4 percent, 5 to 12 percent and 13 to 20 percent slope.

Order 3 soil survey. A low intensity or scale of soil mapping. Soil mapping units in an Order 3 survey are larger than 40 acres. Slope groups have a much wider range than groups in an Order 2 survey.

phenology. The study of periodic biological events such as flowering and seeding, especially as related to climate.

present value. An amount of money which will become a given amount at a time in the future. For example, at 10 percent interest $100 will grow to $110 in one year; therefore, the present value of $110 one year from now at 10 percent interest is $100. If the end product is a series of payments, the present value is the amount that will result in the sum of that series.

proper use. A degree and time of use of current year's growth which, if continued, will either maintain or improve the range condition consistent with coservation of other natural resources.

range readiness. The stage of plant growth at which grazing may begin (under a specific management plan) without permanent damage to vegetation or soil.

riparian. Pertaining to or situated on the banks of a river or other body of water. Riparian vegetation is the vegetation found along a river or other body of water.

Section 3. Refers to grazing administration on public lands under Section 3 of the Taylor Grazing Act which were originally within grazing districts.

Section 15. Refers to grazing administration on public lands under Section 15 of the Taylor Grazing Act which were originally scattered tracts outside of grazing districts.

sediment yield. The amount of sediment moved into a water course. The sediment yield is usually less than erosion rates on adjacent watersheds, where erosion rates are usually expressing soil loss.

sensitivity level. As applied to visual resource management, that degree of concern expressed by the user toward scenic quality and existing or proposed visual change in a praticular characteristic landscape.

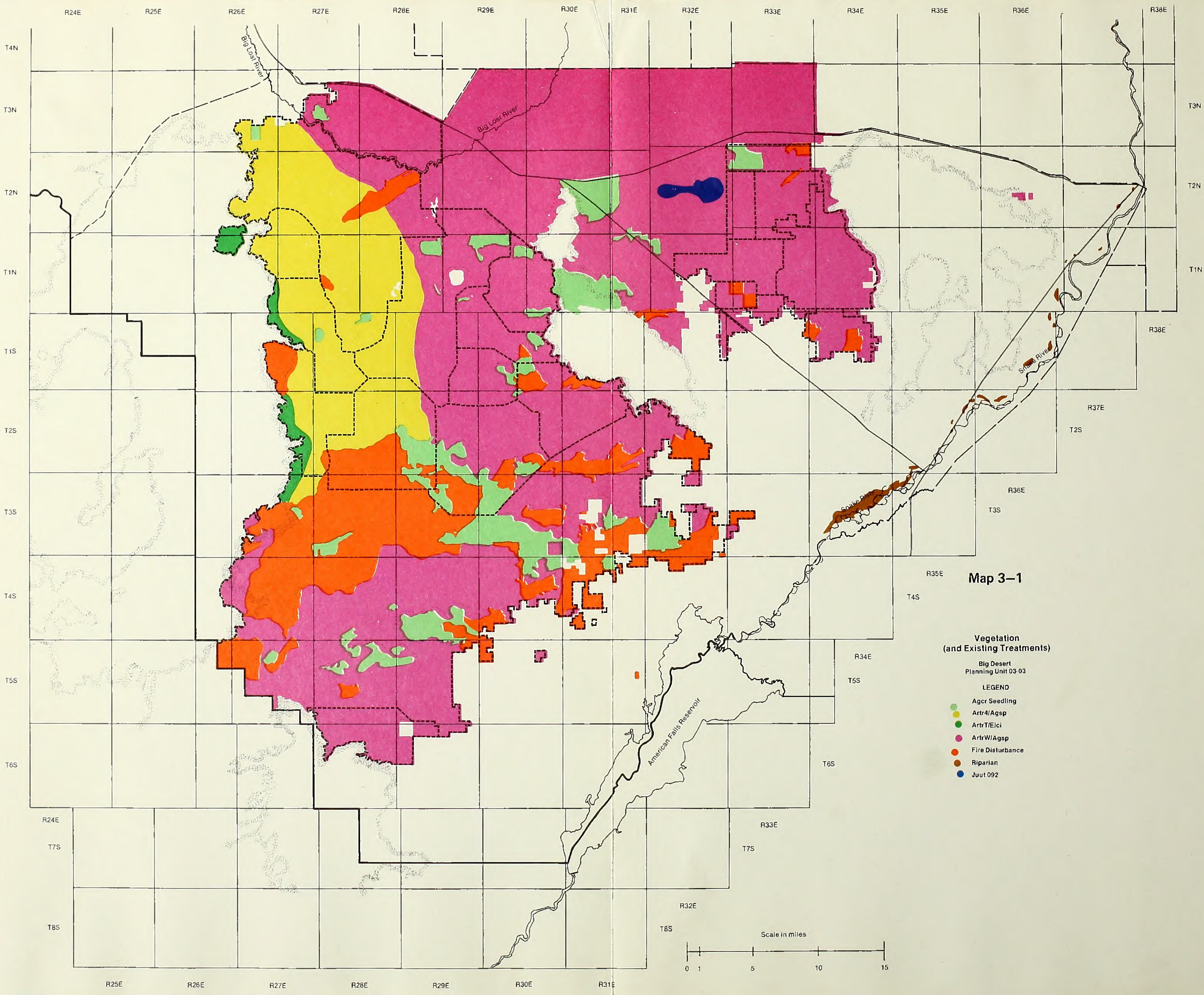
soil surface factor (SSF). A numerical expression of surface erosion caused by wind and water as reflected by soil movement, surface litter, erosion pavement, pedestalling, rills, flow patterns and gullies. Values vary from 0 for no erosion condition to 100 for a severe condition.

sprouter. Plant species that sprout after burning or mechanical disturbance, such as rabbitbrush, threetip sagebrush and bitterbrush.

suitability. The capability of forage-producing land to be grazed on a sustained yield basis without damage to the basic resources of the area or to adjacent areas.

trend. The direction of change in range condition, described in this document as upward, static or declining. Three techniques for determining trend have been employed in the Big Desert EIS area:
apparent--is a one-time observation (of a selected representative area of a vegetation type) when considering vegetation composition compared to the potential natural vegetation, plant vigor, seedlings, surface litter, and soil movement.
plot--current BLM method for long-term measurement and observation of selected representative areas of a vegetation type.
Parker three-step--previous BLM method for long-term measurement and observation of selected representative areas of a vegetation type.

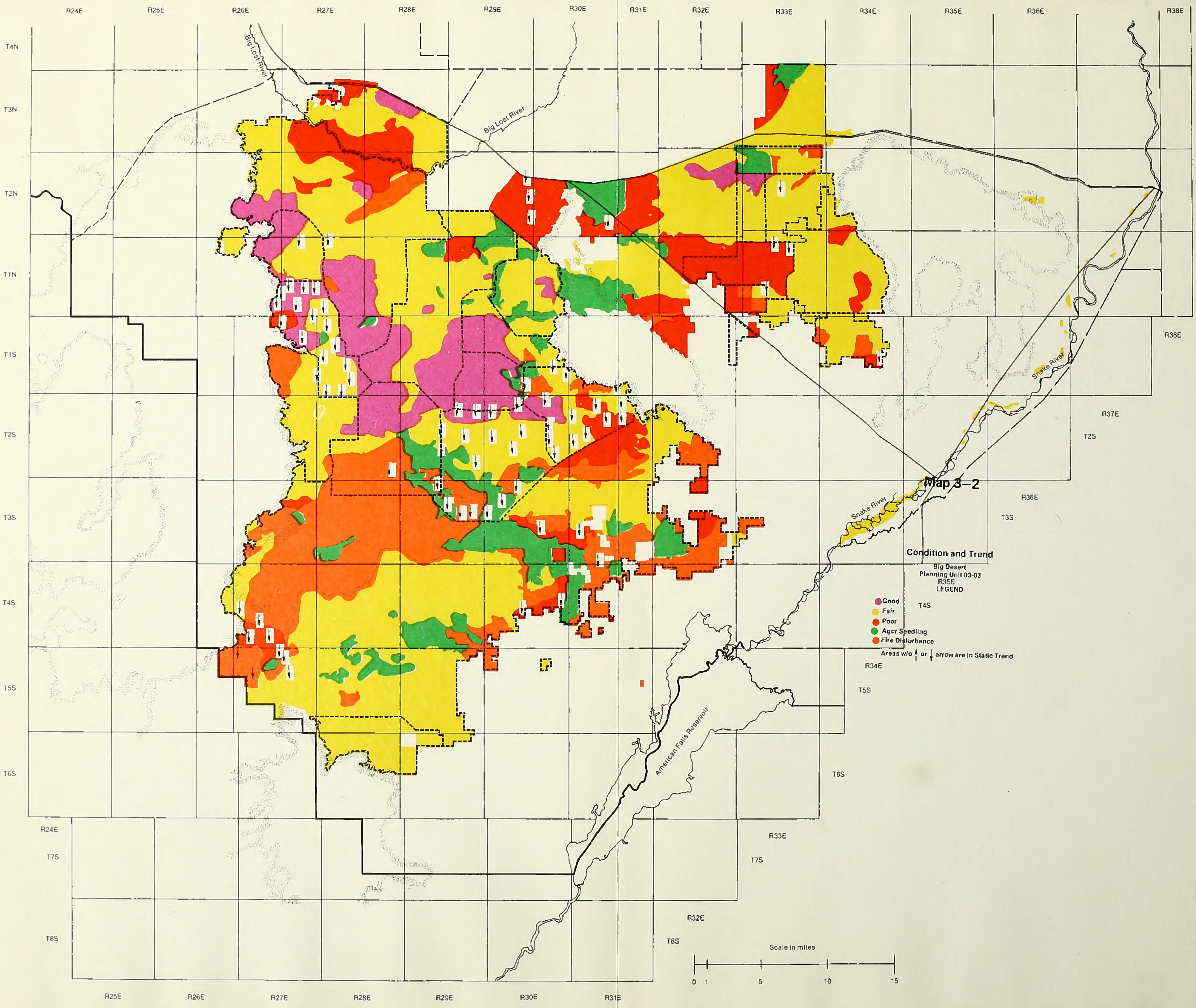
vegetation manipulation. Altering the character of vegetation by burning, chaining, chemical application or other means.



Map 3—1

Vegetation
(and Existing Treatments)

Big Desert
Planning Unit 03-03



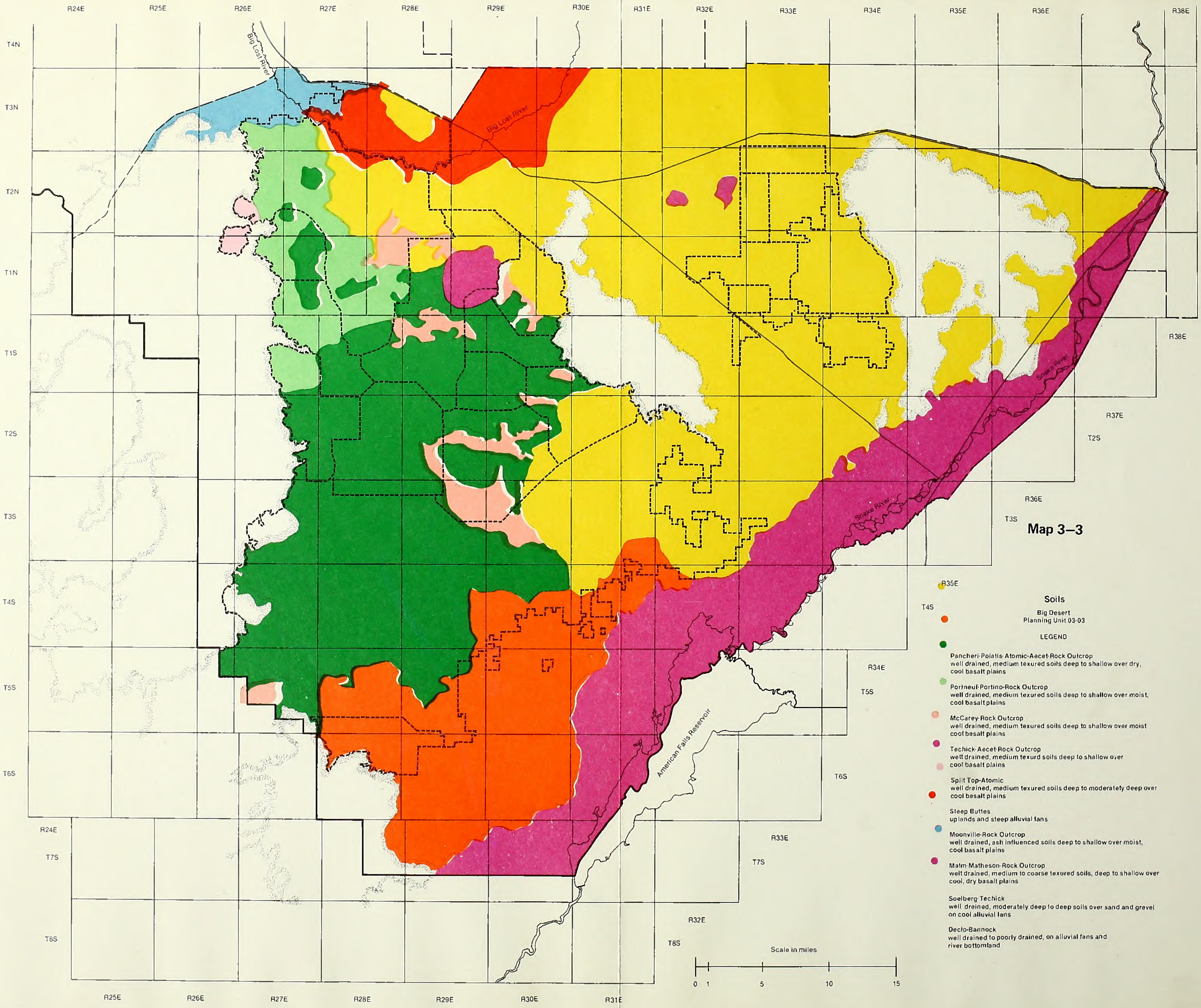
Map 3–2

Condition and Trend

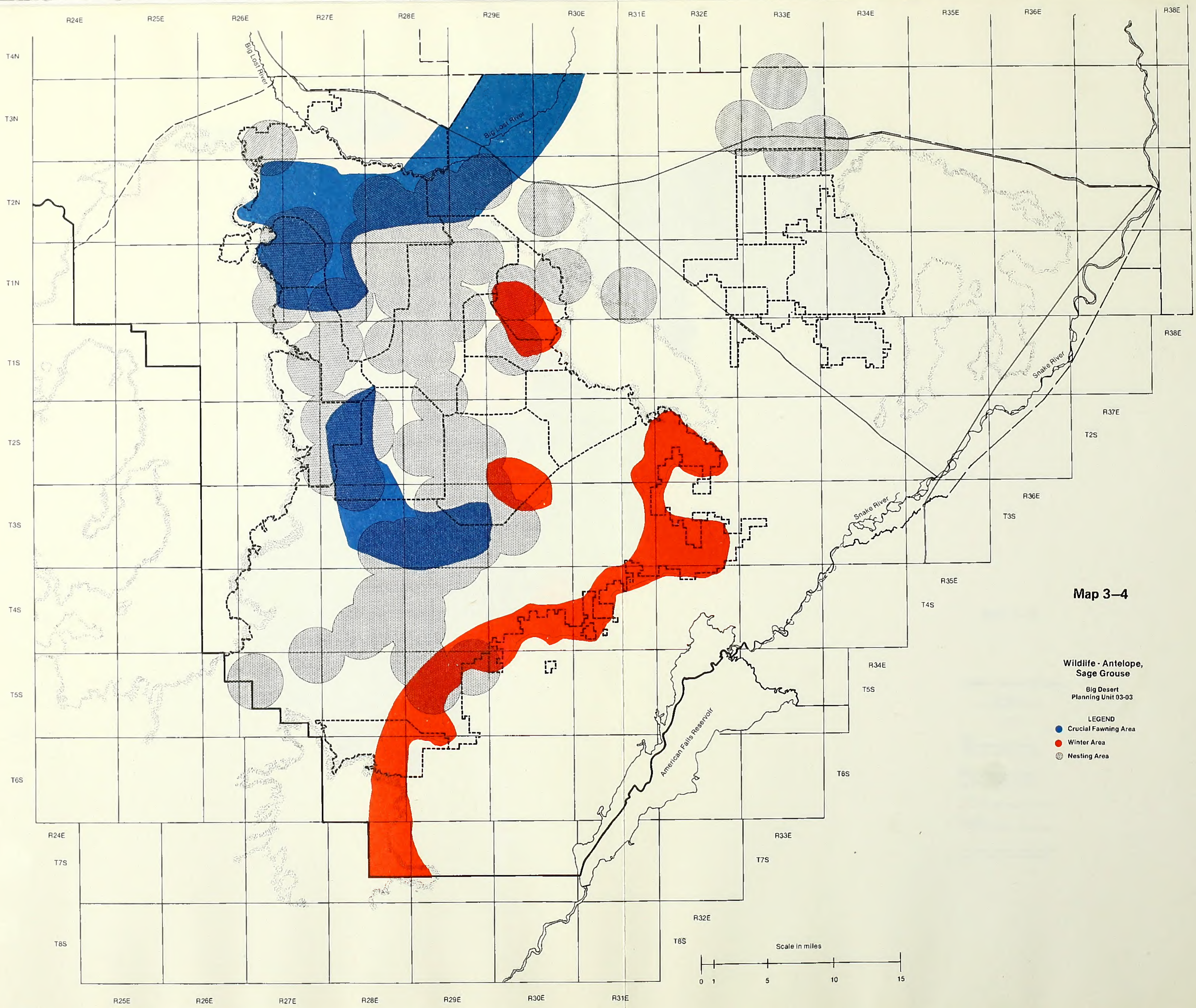
Big Desert
Planning Unit 03-03
LEGEND

- 🟪 Good
- 🟨 Fair
- 🟥 Poor
- 🟩 Agcr Seedling
- 🟧 Fire Disturbance

Areas w/o ↑ or ↓ arrow are in Static Trend

R24E
R25E
R26E
R27E
R28E
R29E
R30E
R31E
R32E
R33E
R34E
R35E
R36E
R38E
T4N
T3N
T2N
T1N
T1S
T2S
T3S
T4S
T5S
T6S
T7S
T8S
R37E
Big Lost River
Big Lost River
Snake River
Snake River
American Falls Reservoir
Scale in miles
0
1
5
10
15
Soils
Big Desert
Planning Unit 03-03
LEGEND
Pancheri-Polatis-Atomic-Aecet-Rock Outcrop
well drained, medium texured soils deep to shallow over dry, cool basalt plains
Portneuf-Portino-Rock Outcrop
well drained, medium texured soils deep to shallow over moist, cool basalt plains
McCarey-Rock Outcrop
well drained, medium texured soils deep to shallow over moist cool besalt plains
Techick-Aecet-Rock Outcrop
well drained, medium texurd soils deep to shallow over cool basalt plains
Split Top-Atomic
well dreined, medium texured soils deep to moderately deep over cool besalt plains
Steep Buttes
uplands and steep alluvial fans
Moonville-Rock Outcrop
well drained, ash influenced soils deep to shallow over moist, cool basalt plains
Matm-Matheson-Rock Outcrop
well drained, medium to coarse texured soils, deep to shallow over cool, dry basalt plains
Soelberg-Techick
well dreined, moderately deep to deep soils over sand and grevel on cool alluvial fans
Declo-Bannock
well drained to poorly drained, on alluvial fans and river bottomland

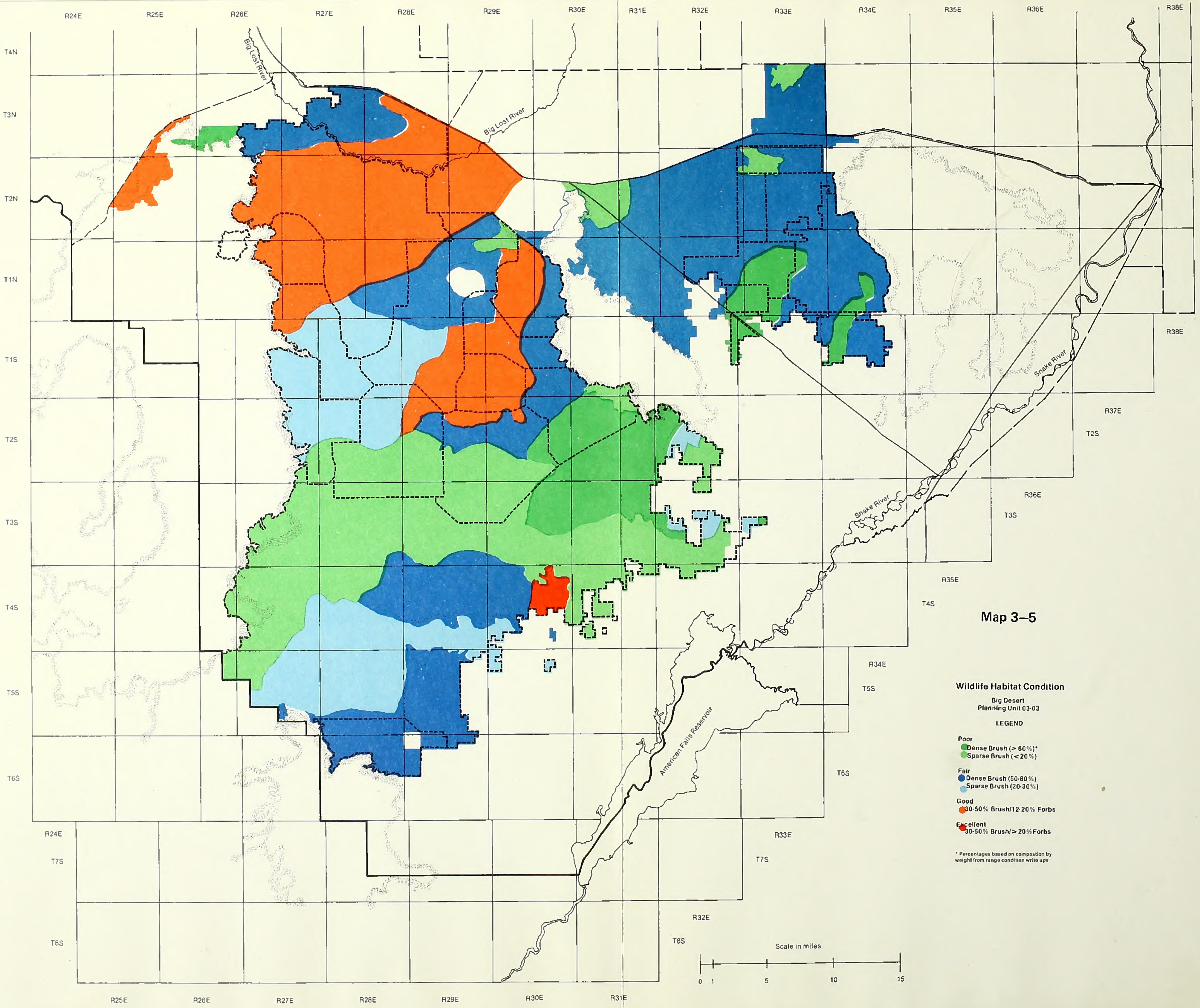
Map 3–3



Map 3–4

Wildlife - Antelope, Sage Grouse

Big Desert Planning Unit 03-03



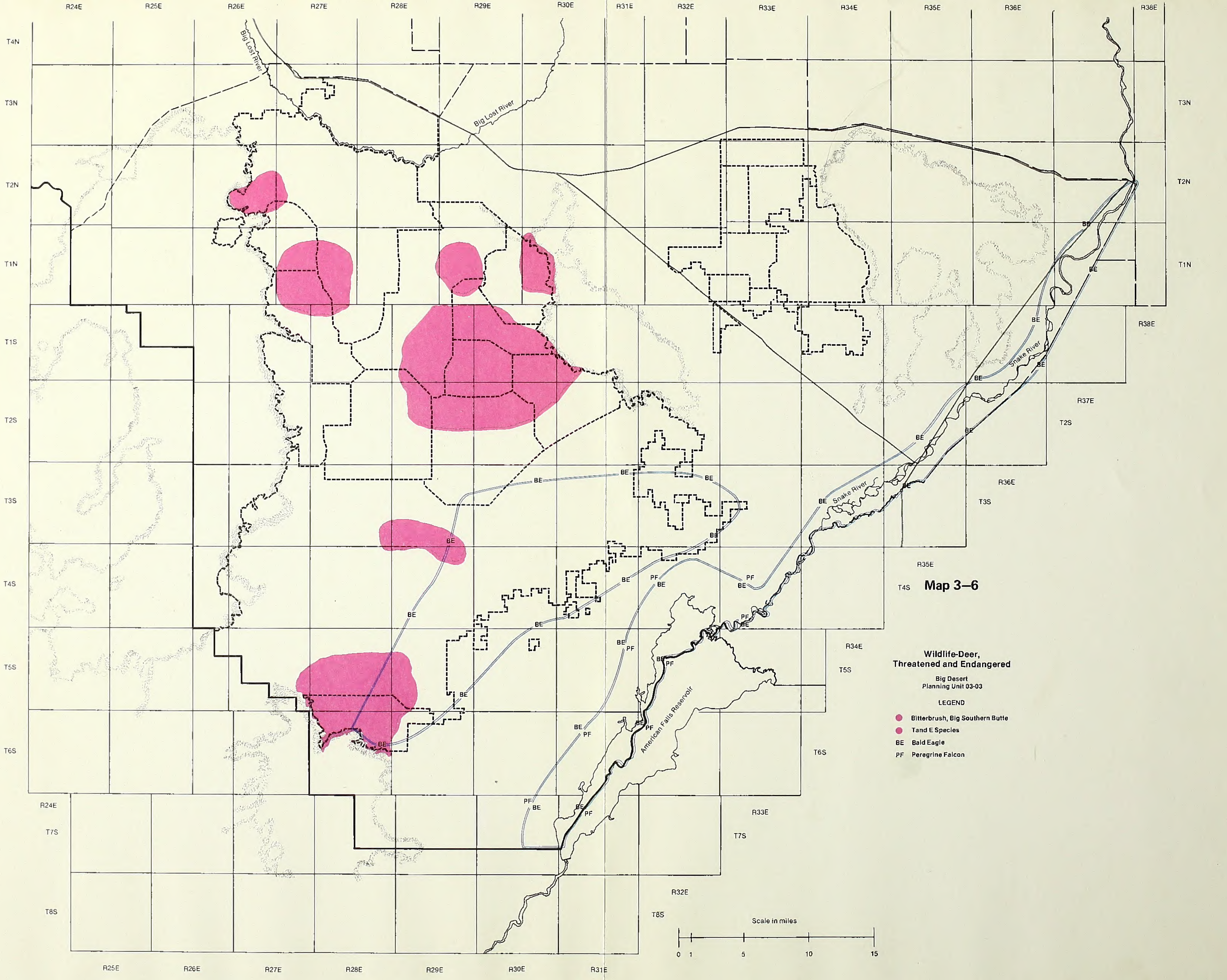
Map 3–5

Wildlife Habitat Condition

Big Desert
Planning Unit 03-03

LEGEND

* Percentages based on composition by weight from range condition write ups



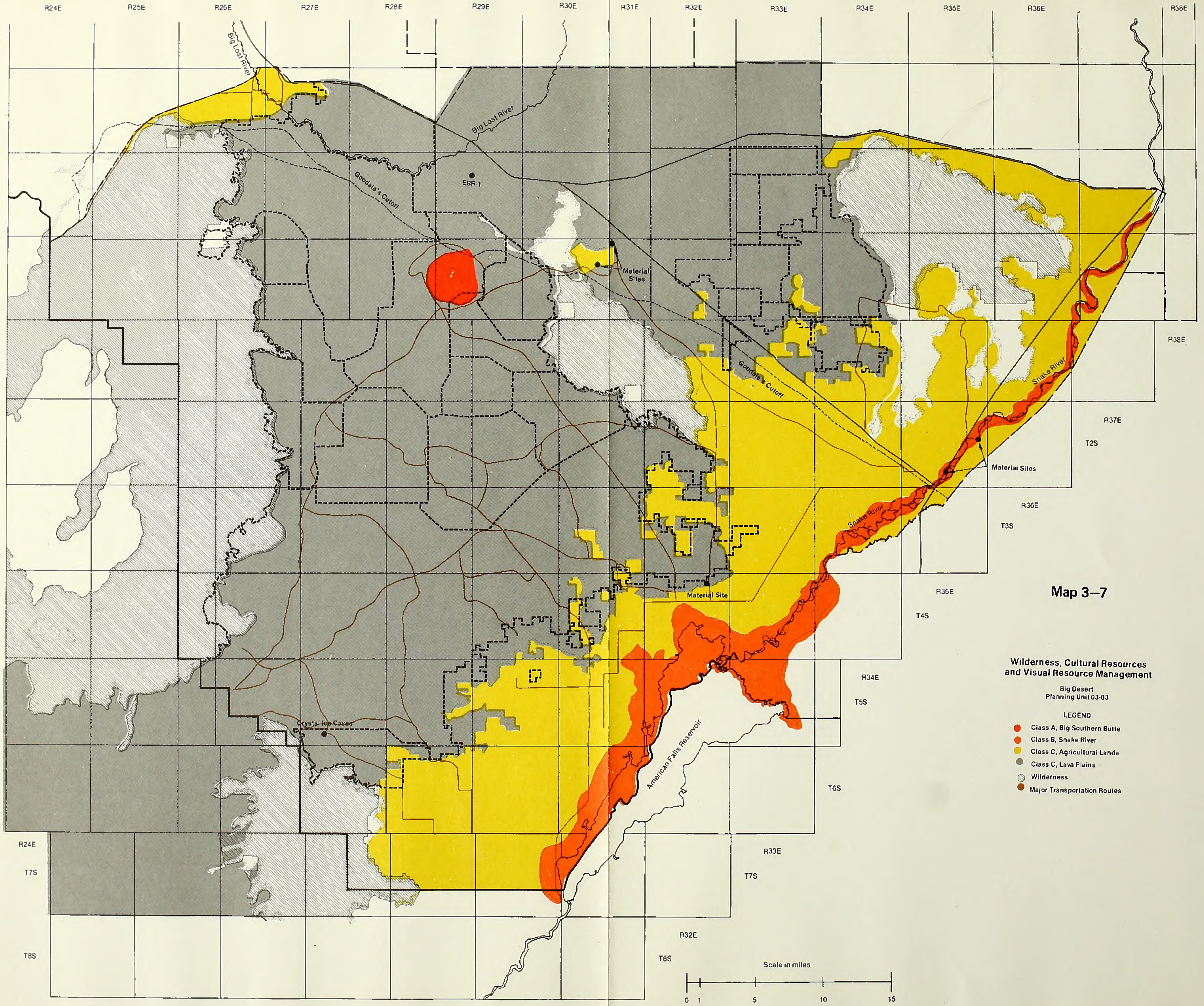
Map 3–6

Wildlife-Deer, Threatened and Endangered

Big Desert
Planning Unit 03-03

LEGEND

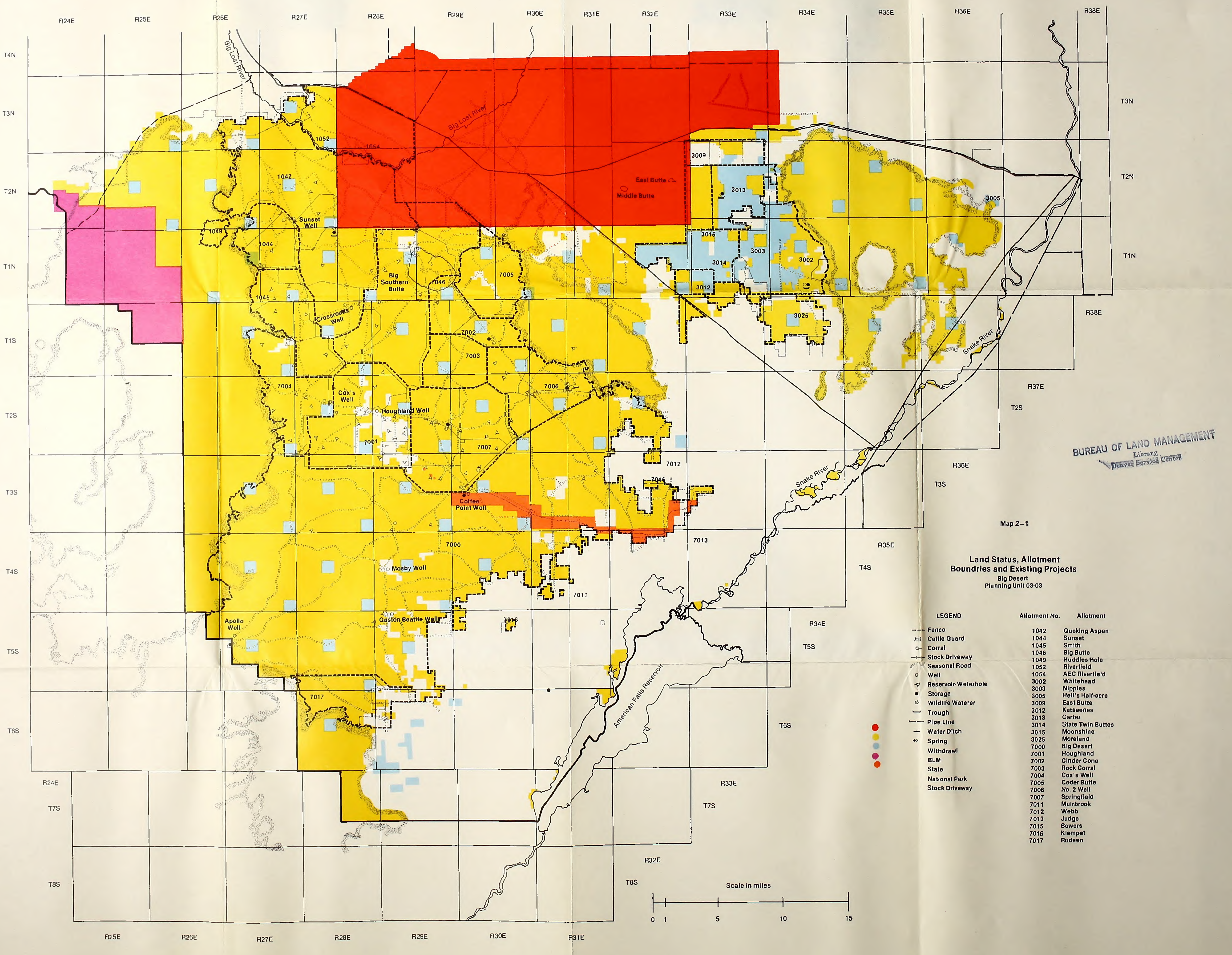
- ● Bitterbrush, Big Southern Butte
- ● Tand E Species
- BE Bald Eagle
- PF Peregrine Falcon



Map 3–7

Wilderness, Cultural Resources and Visual Resource Management

Big Desert
Planning Unit 03-03



Map 2–1

Land Status, Allotment Boundries and Existing Projects

Big Desert
Planning Unit 03-03

LEGEND

- Fence
- Cettle Guard
- Corral
- Stock Driveway
- Seasonal Roed
- ○ Well
- Reservoir-Weterhole
- ● Storage
- ⊙ Wildlife Waterer
- Trough
- Pipe Line
- Water Ditch
- Spring
- 🟥 Withdrawl
- 🟨 BLM
- 🟦 State
- 🟪 National Perk
- 🟧 Stock Driveway

Allotment No.	Allotment
1042	Queking Aspen
1044	Sunset
1045	Smith
1046	Big Butte
1049	Huddles Hole
1052	Riverfield
1054	AEC Riverfield
3002	Whitehead
3003	Nipples
3005	Hell's Half-ecre
3009	East Butte
3012	Katseenes
3013	Carter
3014	State Twin Buttes
3015	Moonshine
3025	Moreland
7000	Big Desert
7001	Houghland
7002	Cinder Cone
7003	Rock Corral
7004	Cox's Well
7005	Ceder Butte
7006	No. 2 Well
7007	Springfield
7011	Muirbrook
7012	Webb
7013	Judge
7015	Bowers
7016	Klempet
7017	Rudeen

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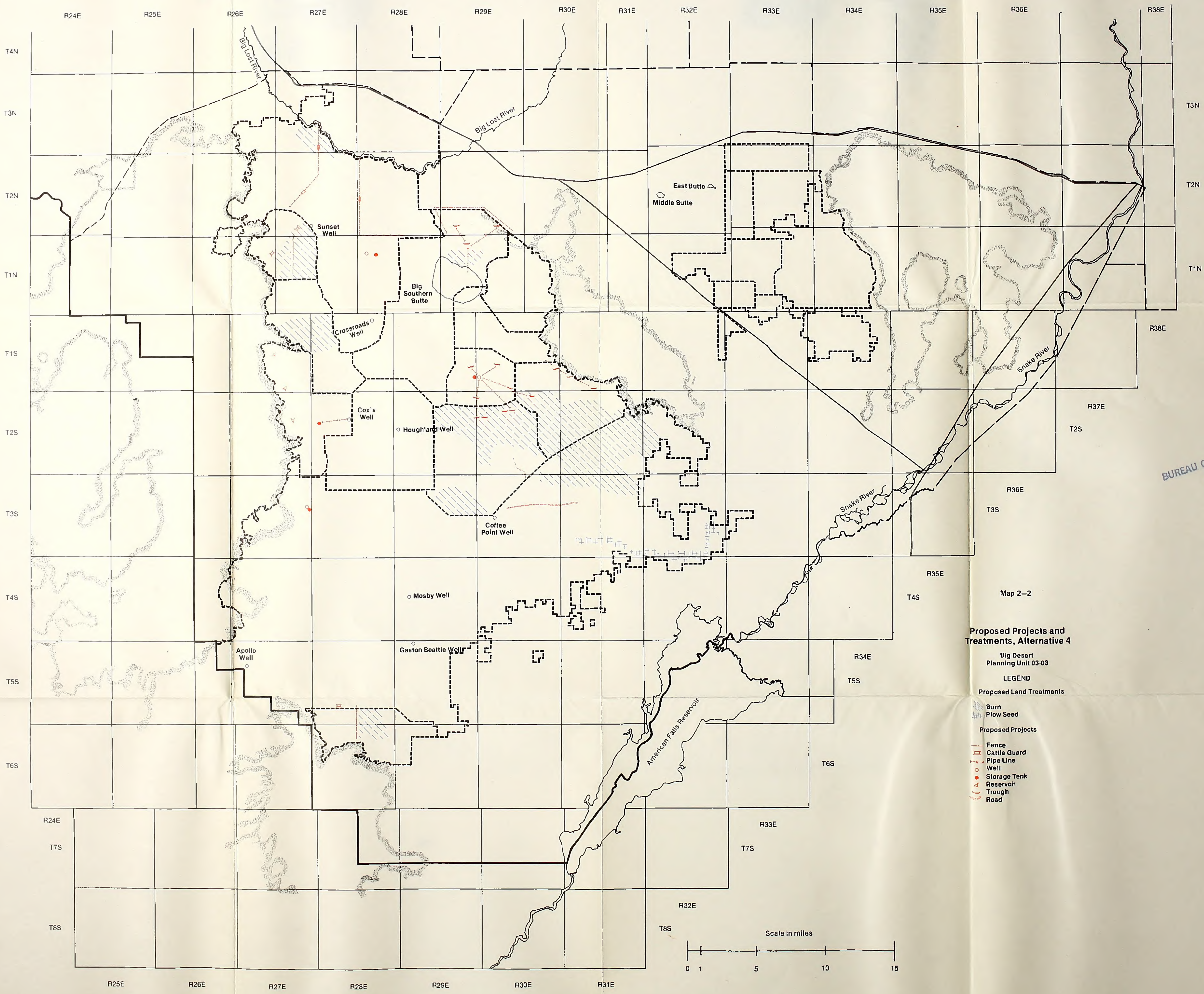
Denver Service Center



Map 2–2

Proposed Projects and Treatments, Alternative 4

Big Desert Planning Unit 03-03

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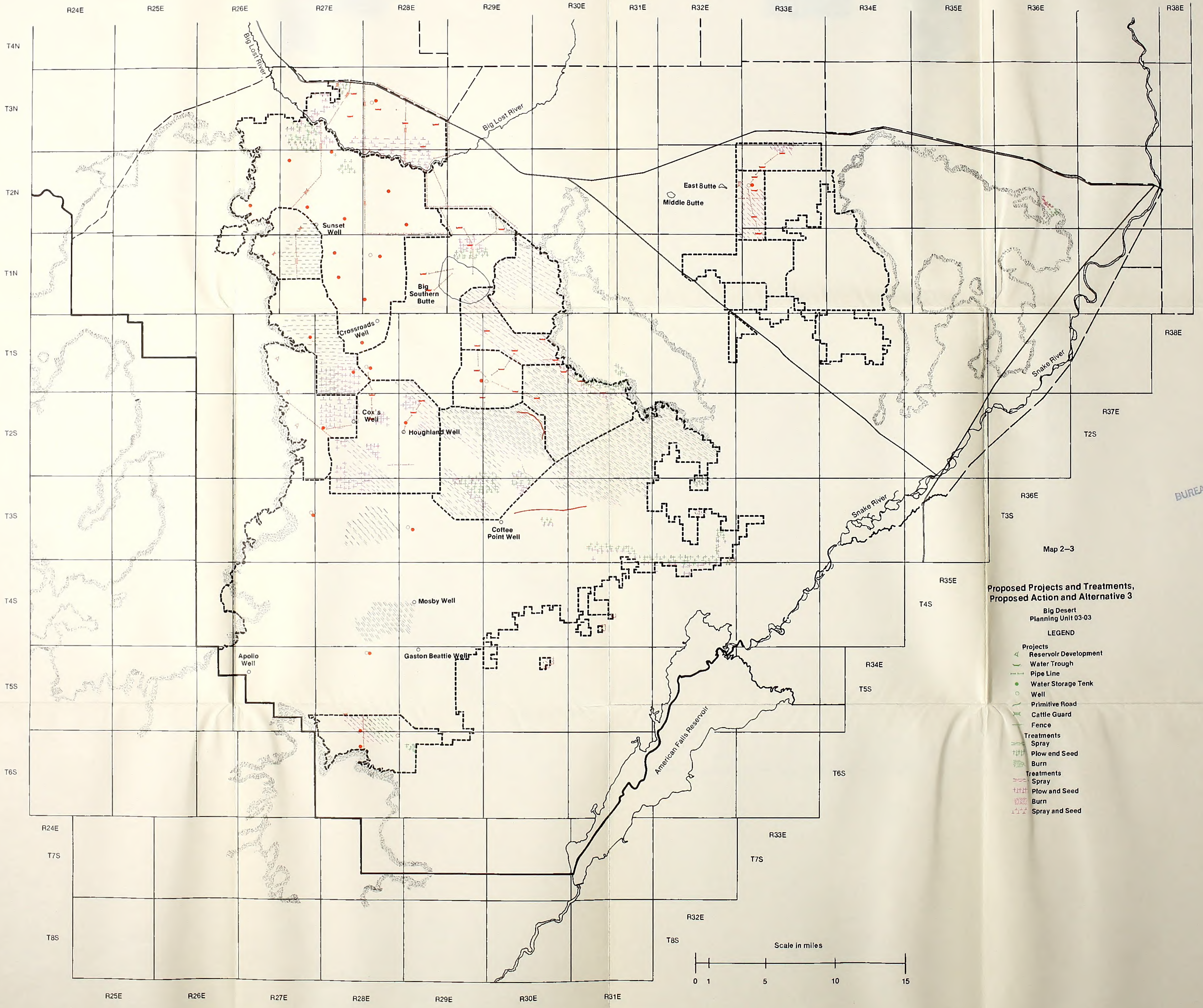
Library
Denver Service Center


Map 2–3

Proposed Projects and Treatments, Proposed Action and Alternative 3

Big Desert
Planning Unit 03-03

BUREAU OF LAND MANAGEMENT
Library
Denver Service Center

BUREAU OF LAND MANAGEMENT
Library
Denver Service Center

Form 1279–3
(June 1984)

BORROWER'

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Proposed range man
program for the B

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Chapter 1

Chapter 2

Chapter 3

Chapter 4

Chapter 5

Appendixes